Political Tyranny Over Business Has Ended!

WELL, it's all over, including the shouting. The expected happened. The predicted and forecasted event came to pass!

The issue as we defined it in our October editorial was: "Business Prosperity Versus the Tyranny of Peanut Politics."

Political tyranny has ended. It's deader than dead herring, and long may it remain dead!

The Coolidge and Dawes victory this week was a smashing victory for American business.

How any man or set of men in this country could imagine that they could put over a winning campaign predicated upon the hypothesis that American business was crooked, that American business men were crooks, that American laborers were serfs, and American farmers were nit-wits, passes our comprehension.

Yet that was the crux of the third party's platform. Twenty-six million voters went to the polls November 4th, and registered their decision against such fool claptrap. Only four million out of the total thirty millions who voted—a bare 13 per cent—decided that they were crooked, crooks, serfs and nit-wits. The big percentage of the electorate, however, decided that this Government is sound; that our institutions are beneficent; that our business men are honest; that our working men are sane, free men, enjoying the highest standards of living on earth and the highest wage scale in the world—and these 87 per cent plumped their votes into the ballot box for a continuance of the present representative of this Government in office, and for the permanence of our present institutions, and for the furtherance of all our business achievements without any more sand-bagging committees of the Senate to hinder or harm them.

American business has a mandate from the vast majority of American electorate to "go ahead." American business received an overwhelming vote of confidence on which it will immediately operate, and which it will in no way abuse.

That is the significance of the November elections.

The whole country has heaved a huge sigh of relief. They have hurled back into the teeth of their detractors a peremptory and decisive denial of the demeaning charges brought against the administration of their Government, their country's business and their country's institutions.

They have said to Deserter La Follette, Renegade Wheeler, Socialists Berger, Hillquist and Debs, Communists Foster and all that ilk of human failures who followed them:

"You can't and you shan't capitalize any of the mistakes nor the discontents nor the disappointments of any of our people into such liability as will throw this country into bankruptcy! Nix on that stuff—we're here to stop you! This is a glorious land where every initiative of brave, hardworking, envisioned men is preserved to them; where every man shall be safeguarded in the possession of all that he may acquire; where every aspiration of his heart and every demonstration of his energy shall be his right to exercise, only insofar as it does not trespass upon the rights of his neighbor."

A land which 135 years ago was but a puling infant in the lap of the old nations, has grown under our wise policies and unmatched constitution, ably administrated, to be the one sole giant among the nations of the earth.

You shan't sink the shaft of suspicion even into that goodly body.

We're proud of our heritage. You say you are not. But you shan't despoil nor destroy that, to the building up of which you never contributed as much effort as the lifting of an eyelash!

No! No Congress is ever going to have any final "say so" as to what is the law! We had an exhibition of what you would do with a Congress elected to your way of thinking.

No! You get no chance. You demoralize, you assassinate society and business. We listened to your propaganda. It's wrong! You're down and out, and we're going to keep you out forever!

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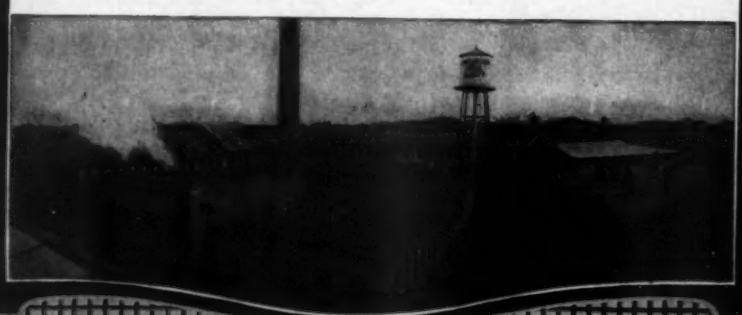

EDITORIALS

It Is Time to Give Thanks

IN ONE of her very interesting stories, Harriet Beecher Stowe has the following:

"The king and high priest of all festivals was the autumn Thanksgiving. When the apples were all gathered and the cider was all made, and the yellow pumpkins were rolled in from many a hill in billows of gold and the corn was husked, and the labors of the season were done and the warm late days of Indian summer came in, dreamy and calm and still with just enough frost to crisp the ground of a morning, but with warm traces of benignant, sunny hours at noon, there came over the community a sort of genial repose of spirits, a sense of something accomplished and of a new golden mark made in advance, and the deacon began to say to the minister of a Sunday, 'I suppose it's about time for the Thanksgiving proclamation.'"

No doubt most of us feel like the deacon did, that it is about time for the Thanksgiving proclamation, for we are sure that all of us have many things to be thankful for.

No doubt most of us could look back over the year and find fault with many things. Business has not been as good as we would liked to have had it, and there are, no doubt, other things that we might complain of, but these are all small compared to the many blessings that we have received during most of the year, 1924.

We are grateful indeed for the many blessings that have been bestowed on us during the year, for health, strength and prosperity, for happiness, peace and comfort. We are glad that the recent election is over and that we can now settle down to doing some real business.

We cannot see anything but bright skies for the future, both as to business in general and business so far as it pertains to the paper industry.

We know we voice the sentiments of the great mass of people connected with this great industry when we say that we have many things to be thankful for and that these so far outnumber the other things that they are small in comparison.

Let us all therefore give thanks on this coming Thanksgiving day to the great ruler of the universe who has provided for us so bountifully.

Red Cross Roll Call

VOLUNTEER roll call groups, headed by representative leaders in the paper industry, have enlisted to secure the maximum response in the paper industry to the annual Red Cross roll call, which was to open on the 11th, Armistice Day.

Aid for the ex-service man and his dependents constitutes the major part of the Red Cross program, and includes money loans, medical attention, disaster relief, public health, etc. The whole country should do its share in this commendable work.

The Men That Industry Needs

WHAT kind of training does industry expect from men needed for executives, administrative and technical positions?

The National Industrial Conference Board estimates that American industry may need 400,000 more persons for this type of responsible positions in 1930 than it used in 1920. This is based on the increasing ratio of administrators, supervisors and technical experts to the total number gainfully employed in industry, as detailed in the United States census of occupations.

In the paper and pulp industry, in which 150 companies, representing over 35,000 employees, co-operated with the board, it was revealed that a little more than 7 per cent of the men employed held executive or other important positions and that of these 22 per cent were college graduates, 13 per cent being graduates of recognized technical colleges.

The question of proper training for the higher positions in paper and pulp mills is one of considerable importance to the heads of these companies and a very interesting and helpful series of articles is starting in this issue of THE PAPER INDUSTRY on "Foremen Training," and we know its careful study by paper and pulp manufacturers and their men will be helpful to the industry generally.

Conserving Forest Products

THE country and all the wood using industries have lost a valuable servant in the death of Secretary Henry C. Wallace of the Department of Agriculture. In speaking of his work in this connection, Chief Forester Greeley has said: "Officials of the United States Department of Agriculture believe that Secretary Wallace's great service to forest conservation can be commemorated in no better way than by carrying out the conference of wood using industries which is to be held in Washington on November 19th and 20th."

The government is taking the lead in this movement only so far as its help and co-operation are needed to bring the various interests together. It is in reality a co-operative industrial movement. We hope the conference will end in an organized attack by forest industries and consumers on those points where timber waste bears most heavily on industrial profits and on the public pocketbook. Investigation has already done much to expose these points. Fortunately to cut down these wastes will not only be in the public interest but will, in many cases, be profitable to industry.

Saving $3,000 every month at this oil refinery by using Kerr Turbine exhaust steam in the stills

Power is practically a by-product and adds nothing to the fuel expense at the Penn American Refining Co., Plant No. 1, Rouseville, Pa.

Two 300-kw. non-condensing Kerr Turbo-Alternators, operating at 150 lb. pressure and 100 deg. F. superheat, exhaust against 25 lb. back pressure to the stills.

This installation has replaced the former practice when the power was purchased and live steam was supplied to the stills through reducing valves. As a result of this change over a clear saving of about $3,000 is recorded every month on the books of the company.

The high efficiency and close speed regulation of Kerr Turbines when operating against high back pressure particularly adapts these units to the oil refining industry and wherever exhaust steam is used in quantities for process work.

Among other leading installations in the oil field are three 1250-kw. Kerr Turbines at the Gulf Refining Co., Port Arthur, Texas, and three Kerr Turbines at the Sinclair Refining Co., Coffeyville, Kan.

We will be glad to advise you in detail, what savings Kerr Turbines can make in your plant. Units in capacities to 2,000 kw., direct connected to either A.C. or D.C. generators can be furnished to operate at high, low or mixed pressures. Also bleeder type turbines and Kerr Reduction Gear driven units. Write us for catalog.

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Foreman Training in the Paper Industry

Part 1—Types of Training Programs

By J. K. NOVINS

Author of "A Training Program for the Factory Foreman," "Foreman Training in Practice," "Manual of Practical Training for the Railroad Foreman," etc.

Foreman Training in the Dennison Plant

THIS series of articles would hardly be complete without a consideration of the foreman training methods employed in the Dennison Manufacturing Company plant at Framingham, Mass. As in other matters pertaining to efficient management and personnel problems, this company has solved its foreman training problem in its own way, and an outline and description of the development of the Dennison foreman training program, the writer feels, ought to be of interest to other concerns in the paper industry.

At the present time the Dennison Manufacturing Company maintains no organized course of foreman training as such. Yet it does provide training for its foremen through various means, and, in the words of Mr. T. G. Portmore, manager of works, "it feels that it obtains better results by this means than it would by a formal training course."

"During the winter," Mr. Portmore informed the writer recently, "courses are conducted one evening a week for about ten weeks in subjects relating to management. Readings and problems based on the case system are given out each week in sufficient time to allow for preparation for the class. At the class a lecture or informal talk is given either by some member of the management or some outside speaker, after which there is a discussion of the problems.

This series is a manual on the subject of foreman training and as such is replete with valuable suggestions for the installation of a foreman training course in the paper industry.

Part one contains four chapters of which two are published in this issue. The other two, "Training Foremen by Conference Method" and "The Organized Group-Discussion Plan" will appear in the next number.

The author of this series is available through these columns to answer any inquiries regarding any phase of foreman training on which the reader might wish to be enlightened.

Monthly Meetings

"In addition to these courses, a meeting is held once a month of all members of the management group which includes foremen. At these meetings, which are preceded by a supper served in the company lunch room, problems of general interest and of particular significance to the company are discussed, and often an outside speaker gives a talk on some current topic. Such meetings have not only distinctly educational advantages, but also do much to promote the spirit of fellowship among the members of the management group.

"Under our Employees' Cooperative Plan, conference committees composed of an equal number of Works Committee representatives and members of the management discuss and report on various matters which are referred to them for consideration. A policy has been maintained of appointing foremen to membership on these committees rather than limiting the membership to higher executives. We feel that the training which comes from such meetings is invaluable, and regard it as one of our best methods of foreman training.

"One method of training our foremen is to transfer them from the particular job on which they have specialized to other work which will give them a broader training and an 'outside point of view' in

regard to their own work. For example, we have made it a practice to transfer to the Employment Department various foremen to act as interviewers. Such work does a great deal to broaden the foreman and make him a company rather than a departmental man."

Broadening Foreman's Experience

The plan of rotating foremen through various departments had its origin in the Dennison plant in March, 1919. At that time it was arranged that foremen and department heads were to come into the employment department on an assignment for a period of three months. In a special report issued at the time the Federal Board for Vocational Education commented very favorably on the idea.

"It was felt that by this means," the Federal Board pointed out, "it was possible to do more to educate them in principles of wise personnel management than could be accomplished in any other way in two or three years. As an experimental beginning, the head of an important operating department was relieved of all other responsibility and appointed as temporary assistant to the employment manager. At the same time a research man was added to the staff, and it was arranged that he should spend a great part of his time in the operating department. This plan has worked out very satisfactorily."

A recent inquiry by the writer brought out the fact that in all there have been twenty foremen and department heads placed temporarily in the employment department.

"The same plan could very well be applied in other departments," the Federal Board report continued. "Men who have mechanical talent could spend some time with the master mechanic, gaining his specialized staff point of view. Others might be assigned to work in the planning department or in making time studies.

"One of the appreciable by-products of the rotation plan is the reaction which the men from operating departments are likely to have upon staff employees. They bring a different point of view and a fund of practical information which these persons can not always command."

Early Experience

Prior to that, as far back as 1917, the foreman training program in the Dennison plant consisted of a series of lessons, which dealt with a wide range of organization and production topics, treating such subjects as "Locating the Industry," "Purchasing Materials," "The Meaning of Scientific Management," "Stores Methods," "Forms of Organization," "Machinery and Equipment," "Employment and Personnel Problems." The majority of meetings were led by representatives from the company's regular staff. A review of the early experiences of the company in inaugurating the training would be interesting, and the writer will therefore quote from that portion of the Federal Board for Vocational Education report prepared by Dr. Roy W. Kelly, then Director of the Bureau of Vocational Guidance of Harvard University and later Personnel Director of the Standard Oil Company.

"The plan," Dr. Kelly wrote, "was to devote each evening to some definite topic. A paper of 30 minutes' duration was read, and this was followed by discussion. During the week before the paper was given, a selected reading assignment was prepared by the one who was to give the paper, printed in the shop, and distributed to the foremen.

"For example, in the discussion of 'personnel and employment problems,' printed material was assigned taken largely from the May, 1916, Annals. Each foreman had to read this before he came to the class. This prepared them more effectively for consideration and discussion of the principles to be presented than would otherwise have been possible. This session was led by the employment manager, who illustrated his talk from problems which had arisen in his daily contact with the foremen. After a general discussion, the group of 50 foremen broke into six groups of eight each and went into the committee room for round-table discussion of problems. These problems were put in the form of specific questions; the foremen considered the question from the point of view of what would be the wise, fair, human thing to do in each particular case."

In addition to the round-table discussions, the Dennison foremen were given problems to take home.

"Fifty men, taking a very practical problem of that sort under advisement," Dr. Kelly commented, "and writing a paper about it, will reveal to the personnel management their precise reaction and attitude toward the matter and will almost invariably reveal any situation demanding careful treatment."

Questions for Foremen's Meetings

An idea of the form the foremen's discussion took in the Dennison plant can be gained by an examination of the following list of questions which formed the basis of one meeting:

What should be done with the employee who is valuable on his job but who is a habitual drinker?

What should be done with the employee who is unsteady and who never explains absence until he returns?

How should an employee be approached when it is necessary to have him work on other than his regular work, whether in his own or another department? Should the employee be informed how long he will be on the new work and what his wages will be?

On what will an employee's rate of wages in a new position depend?

What action should foremen take when approached by an employee regarding some general condition

under which he is working; that is, heat, light, ventilation, etc.?

How should foremen handle requests for pay increases?

When an employee is absent on account of sickness or accident, and the foreman finds that the employee temporarily placed on the job of the absent employee is superior to the regular man, should the regular employee be reinstated when he is ready to resume work?

Should an employee ever be reprimanded in public for breaking a rule or committing an error?

If an employee is not put on the job for which he is hired, but there is other work available in the department, what should be the procedure?

When an employee asks to have his work changed for the sake of his health, what should be the procedure?

Is it advisable ever to change employees to jobs they don't like, merely for discipline?

When an employee is held on time-work pending the determination of new piece rates, should any changes be made in the time rates if there should be any unusual delay in installing piece rates?

Is it ever advisable to offer an employee who has given his notice more money to stay?

What can you suggest to us that will assist foremen in becoming more efficient on their jobs, especially with reference to handling personnel problems?

Present Scope of Courses

In 1923 arrangements were made for six courses of study for foremen and others, beginning December and lasting two months. Meetings were held weekly, at 6:15 p. m., and closing promptly at 8 p. m. Approximately two hours of study per week were required in addition to the regular class work. Two of the courses were given by professors from nearby universities. Company exexcutives conducted the other courses.

The following classes were announced for Tuesday evening, beginning December 6:

Principles of Industrial Management. Open to all employees. Talks on such subjects as Planning, Purchasing, Employment, Wages, Time Studies, Rate Setting, Merchandising, etc., to be given by factory executives. This is an introductory course and forms a background for further study in industrial management.

Industrial Psychology. Open to those who have been members of previous Industrial Psychology classes or who have had equivalent training. An advanced course in Psychology and its relation to human problems in the factory.

What Industry Can Learn from Its Own History. Open to those who have been members of previous management classes or who have had equivalent training. Our present industrial organization will be studied in the light of its history.

The following classes were announced to be held on Thursday evenings, beginning December 11:

Report Writing. Open to those who have been members of the previous management classes. The fundamental principles of report writing will be studied and practice given in writing various types of reports.

Machinery and Facilities. Open to those who have been members of the previous management classes or those whose work is along mechanical lines. Study of factory engineering and the mechanical problems of the factory.

Developing a Lecture Study Course

THE importance of the lecture method in an organized training program for foremen cannot be minimized, although in recent years it has come in for a great deal of criticism. The most common criticism is that the lecture, although listened to with interest by the foremen, will be forgotten the next day and no use made of the material during the working day of the foreman. The sole redeeming feature, the critics say, is that a lecture enables the foreman to receive information without taxing his intelligence during the infusing process. When the lecture is delivered by an interesting speaker, the result, if only temporary, is a strengthening of the morale of the supervisory force.

Progressive concerns have solved the problem in a different way. Realizing that a lecture-training course often is the only effective training medium at the disposal of the supervisory force, because of the size of the organization, necessitating the formation of large groups, and because often it is the men themselves who prefer this method, enterprising educational directors have modified the lecture machinery until now it bears little semblance to the old-type platform oratory.

And that the lecture method is still an important factor in foreman training is manifested by the experiences of some of our largest industrial organizations. Among the large firms that have developed lecture study courses for its foremen is the Dennison Manufacturing Company.

Lectures Plus

The problem has been solved by combining lectures with group study. In other words, after listening to a lecture the foremen are divided into small groups to discuss certain phases of the lecture as these touch their experience and individual reactions.

Second, along with the lecture the men are supplied texts as well as other aids, this material also relating directly to their individual problems. Most times, these aids consist of questions and problems for use during the group discussions after the lecture, and sometimes before the men go to the lecture.

Third, the men are allowed to state their choice

of lecturers, and the management always keenly anticipates, and generally acts on, any suggestions by the men as to changes of lecturers and topics.

In that way the lecture, where it is the only method employed, is made use of in connection with regular

Here is a type of co-operation between foremen and a factory executive. The foremen meet after working hours for an informal discussion on factory problems. One of the plant executives delivers a talk on a factory problem, illustrating his talk with diagrams on the blackboard. After this talk, the foremen visit the executive's department to study its operation and the application of the principles laid down in the talk

group discussion and class study by the foremen. In some plants the men meet weekly for group discussions, and then all assemble in one room to listen to a lecture. In the case of the plants to be discussed in this article, the lecture is the crux of the training program, with the other aids, such as group discussions, serving as auxiliary bolts.

Origin of Lecture Plan

The lecture study plan was really developed in Philadelphia, and in this department it is interesting to point out, a number of concerns in the paper industry played a leading part. Among these were A. M. Collins Manufacturing Company, Dill & Collins Company, Jesse Jones Paper Box Company, and the United States Paper Box Company, Inc.

In 1914, there was a severe period of unemployment. The city authorities of Philadelphia employed Professor Willits of the Wharton School of Commerce and Finance of the University of Pennsylvania to prepare a report on the unemployment situation. As a result of his report, a permanent organization of Philadelphia employers was formed for the purpose of discussing ways and means of stabilizing employment throughout the city. Soon superintendents, heads of departments and employment managers in the local plants were invited. In 1920, the organization, known as the Philadelphia Industrial Association, was divided into three groups, one consisting solely of executives, the second of employment managers, and the third composed exclusively of foremen. The foremen were organized into a club.

Through the medium of this foremen's club, the association began an extensive program of education, with the purpose of informing the foremen in local industries of the larger problems of industry. Monthly meetings of the foremen were held, foremen from various plants, including the paper plants above mentioned, attending in a body. Aside from the monthly meetings, the foremen were offered a training course consisting of a series of weekly lectures by industrial executives on such topics as "Types of Industrial Organization," "Relation of the Foreman to the Organization," "Planning, Scheduling the Routine of Work," "Group Relations to Labor," "The Human Element in Industry," and "Industrial Health and Safety Supervision."

It was provided that foremen choose one or more special courses best suited to their needs. It was also arranged that after listening to a lecture, the foremen be segregated into groups, these groups to go into conference to discuss the subject presented by the speaker, and then return to question the speaker on mooted points. It was the practice to segregate the groups according to industries represented. Thus, the paper industry foremen formed distinct groups for discussion of the problems as these related to the needs of the industry.

The meetings of the foremen were held in a local school building. After the lecture, the groups met in the several school rooms. Since it was a co-operative venture of Philadelphia concerns, only nominal fees were charged the men. When the men attended the sessions regularly, the fees paid by them were refunded by their employees.

Through circumstances that would be irrelevant to discuss here, the venture was abandoned several years. But a number of employers still continued definite forms of foreman training for foremen in their plants. Among these were A. M. Collins Manufacturing Company and Dill & Collins Company. Both of these concerns made efforts to continue definite foreman training programs. They became interested in the foreman training program promoted by the Federal Board of Vocational Education and instituted foremen's conferences. These conferences will be taken up in other articles in this series.

The Use of Texts

It is a well known fact that foremen will not read extensive texts on subjects assigned to them, unless their interest is sufficiently aroused to make the reading voluntary and unless there is a definite connection between the reading of the text and the solution of definite problems facing them. In a lecture study program, it is usually the rule, something that was developed by the Philadelphia Industrial Association, to furnish the foremen in advance an outline of the

topics to be discussed at the forthcoming lecture, in order that the men would be prepared in advance to enter into a discussion of those points, to suggest their amplification, and request an extension to points overlooked.

One middle-West concern that uses the lecture study method has arranged that such an outline be furnished the foremen at least a week in advance of the lecture. In addition, a full verbatim record of the addresses is kept, and a weekly news letter prepared which embodied the general discussion of the topic.

This news letter is a very interesting document. Aside from the summary of the points made by the speaker, the discussions by the foremen are briefly recorded. On the back side of the printed sheet are recorded brief "Items of General Interest," such as brief reports of lectures in other plants and announcements of contemplated lectures. It also contains brief suggestions for improvement of the study course sent in by foremen. In one of the news letters, the writer found this suggestion: "At one of the works the suggestion was made that the meetings of the groups taking the course be opened with a review of the subject of the preceding week and a short discussion of the results of the lecture, stating whether or not any of the points brought out by the speaker have been put into practice."

Another idea developed is to furnish the groups questions relating to the topic a week or two before the lecture is held. The questions, usually three in number, are printed on a sheet of paper that can be slipped into the pocket without folding. The questions occupy only half of the space, the rest of the space being reserved for note-taking by the foreman as he listens to the lecture. Several sheets, each relating to a lecture, are made into a pocket pad.

Thus, under the topic heading "Discipline and Morale," the following three questions are noted on one page:

1. How can discipline be enforced without injuring the morale of the working force?

2. Before recommending discipline, what factors should be considered?

3. Is it good practice in recommending discipline to give consideration to long standing offenses?

Post Text Methods

Some firms do not find it advisable to hand out material before the lecture, for the reason that it would tend to take away from the men's interest in the lecture. This view is held by an executive of several years' experience in foreman training work.

"For the classes conducted last winter," he told the writer, "we prepared mimeographed sheets outlining the subject matter under discussion, the material being gathered from various training courses and books on foremen training and from the experience of the instructor.

"These mimeographed sheets were not given to the foremen as a text, but were handed to them at the close of the session at which that particular subject had been discussed. The theory of this plan is that the subject of discussion when presented was largely new material and the foremen were led to express their own thoughts without being influenced by having previously read any text on the subject. The instructor attempted to direct the discussion so as to bring out and emphasize the points intended to be taught by the lesson.

"We have tried out both the 'pre-text' and 'post-text' methods and we are convinced that the foremen take more interest in reading and preserving these texts after they have discussed the subject in the meeting. We also find that the men enter into the discussions much more readily and with more originality, where they have not been previously supplied with any text discussing these problems."

Followed by Examination

Some concerns have adopted the practice of concluding the lecture-study course with an examination. In one large plant, the questions for such examinations are prepared by the lecturers. This concern has developed another idea in connection with the lecture course. At the end of the course, and before the men take the examination, they spend two and a half days visiting the various departments under the guidance of competent guides. In this way they have the opportunity to observe the methods touched upon in the lectures by the various department men. Last year, according to the vice-president of this concern, twenty-two men took the examinations, all of whom passed and received a certificate of merit bearing the signature of the works manager.

The ideas developed by this concern is capable of many possibilities. At most, if the foremen are lectured on the various departments, they should be given an opportunity to visit these departments and observe at first hand the various operations. The situation in some plants is such that the foremen rarely get around to the other departments, with the result that, despite their good intentions, they do not properly co-operate with these departments. A federal official recently said that in one plant where he conducted a foremen's conference hardly any of the foremen knew the departments other than their own. Besides, by giving the opportunity to visit the departments they will take keener interest in the lectures, especially if the visit is timed previous to listening to the lecture on the particular department, or immediately after.

He put off subscribing for wide-awake trade journals, because he thought he couldn't afford them. When he finally became desperate for a solution of his hard-times problem, the situation had gotten quite away from him and was practically hopeless.

The Machine Tender

A Consideration of His Value and Duties in a Paper Mill

By EMDEE

THERE are more than fifty-seven varieties of machine tenders, and the various grades of paper call for different kinds of machine tenders. A good machine tender on Book paper is not a good man on News, nor will a man, expert in running a News machine, be a success on Book paper or other grades.

A News machine calls for a machine tender whose greatest asset is speed, quick perception, and activity to keep the paper running over the machine without breakage. He must have determination and decision when things begin to go wrong. On account of the great speed of News machines, it is not easy to detect the causes that make the paper break, and it is only after years of constant practice that a man becomes so accustomed to this speed that he can easily and quickly discover defects, which would be impossible for a man accustomed to slower speeds to see. Thus the News machine tender is in a class by himself when it comes to making paper. Production and uniform weight of paper are the two most important factors in his work, and he is trained accordingly.

The writer knows of News machine tenders who believed that they could run a machine making high, machine finish, Book paper just as well as they handled the News machine, but he has never heard of one that was successful in doing so, unless his employers were willing to stand the trouble that his attempt involved. For it would be months before he would become familiar with the qualities, formation and finish of Book as compared with that of News. And in handling the paper, I have never known of a News machine tender who could come directly from a News job and handle paper on a Book machine.

The above applies to the Book machine tender, when we consider his relation to a News job. Both of these men know how to control various parts of the paper machine, but it is the speed and stock made on these machines that make up the big differences which only experience can alone produce expert work in their operation. The same theory applies to the man making the finer grades of paper, such as Bonds and Writings, or the coarser grades of wrapping, boards, and so on down through the list of the several grades of paper.

The Valuable Sense of "Feeling"

One of the best Book machine tenders I ever knew was a man whose sense of feel was so delicate that he would, by feeling the finish of a sheet of paper, note a difference that not two men in a hundred would detect. He was a paper maker who, upon the examination of a sheet of paper, would first note its color, then its formation, finish, strength, opacity, bulk and sizing. Upon the conclusion of his examination, he had firmly fixed in his mind that particular piece of paper, and knew its value as compared with papers he had made or seen. He was a maker of Book papers, and the qualities of paper he carried in his mind were ones that he had always applied to the papers he made. Given a sample of paper to match, he would check all of these qualities and when making the paper, check them one by one until he had secured a match.

This man was a Book machine tender, and today is on the same job that he started on; he has had opportunities for advancement, but will not assume the responsibility that goes with such advancement. He is almost the perfect machine tender on Book paper, and the mill in which he works has a reputation on certain lines of Book paper that no other mill has ever been able to take away, and a good part of this reputation is due to the knowledge and efforts of this one machine tender.

The makers or machine tenders of Fine papers, such as Bonds and Ledgers, do not look for the qualities in their papers that the Book man seeks. Color, formation, hardness, rattle, sizing and strength are all factors that they check, as well as weight, which is a very important factor in the more costly papers.

The speed of the Fine machines is much less than Book, and the methods of operation differ in several ways. The weave of the felts and wires are not the same as those used in making Book paper, and when it comes to "washing up" the machine, the Book machine tender would have to take some lessons in the thoroughness of such work, for in the making of Fine papers, cleanliness is of utmost importance, and many a "washup" that would pass muster in a Book mill, would not be tolerated in the Fine mill.

The lay-boy on the Fine machine is something that will stump any machine tender who has not had experience with such machines and it is a very, if not the most, important part of the Fine paper machine, and hardly anything outside of years of experience will give a man the knowledge that is essential for its successful operation. This machine, which lays up in piles expensive paper that has just passed through the glue bath, has more or less of a tendency to "kick up" trouble of various kinds, and knowledge and tons of patience upon the part of the machine tender are the only things that can prevent the loss of considerable money in the manufacture of paper under these conditions.

The makers of the coarser grades of paper also

have their troubles, which only experience can remedy, and no one will question the helplessness of a News, Book or Fine machine tender, if suddenly shifted onto one of these jobs.

After due consideration of the above facts, it would seem that though we have in the industry paper machine tenders, each grade of paper demands a certain kind of a machine tender, and the fact that a man is a machine tender does not mean that he is competent on any kind of paper made.

The best machine tenders on various grades of paper are those men who have made a study of the requirements of the papers they make, and do all in their power to secure the best qualities under existing conditions.

Many machine tenders are inclined to leave all responsibility for the various qualities of paper rest upon the boss machine tender or superintendent, feeling that if the machine runs well, they are doing their job as it should be done. These kind of machine tenders usually remain as such to the end of their time in the business, for they do not develop ability to judge quality or how to obtain it. They have no initiative and wait orders on matters they have done hundreds of times. They do not keep in mind the qualities so important on good paper, and neglect them until their attention is brought to them by the man in charge.

Position of Great Importance

Machine tenders can make or break the best mill ever built, for they have charge of the one machine in the paper mill that controls the operations of the balance of the mill. Despite the efforts of the best and most clever beater men, a poor machine tender can easily undo his work.

The writer is of the opinion that the majority of paper mill owners do not place enough value upon the machine tender and his work. The importance of his job in the mill and the effect of his work on the profit or loss in manufacture does not seem to be realized, as we are aware of the fact that very few mills keep records of the work of the machine tenders, except in the matter of production, which is not a fair criterion of his ability. The matter of production is affected by many things outside of the machine tender's control. What should be given attention is the machine tender's records of control of the qualities and uniformity of the paper he makes, his judgment on these qualities, his ambition to progress and whether or not he has initiative, or is of the kind that will not make a move unless directed by some one else.

In other industries there are many positions, not anywhere as near important to such industries as is the position of machine tender to the paper industry, where a searching inquiry is made into the qualifications of the applicant for the position before it is given, and then the successful applicant's work is carefully checked up to a standard for such kind of work. Undoubtedly the paper industry will sometime adopt a method which will care for the more important positions in the mill, for not until then can the full value of the machine tender be determined.

Business Engineering

By J. H. TREGOE
Exec. Mgr., National Assn. of Credit Men

GOOD management is a very comprehensive term. One definition is, keeping the operations of an enterprise within proper lines, preventing it from falling into bad ways. This is desirable, to be sure, but it seems to me that something is needed beyond mere management. This, for want of a better term, I have called business engineering.

The foundation of a building must be laid so that the structure when imposed upon it will be thoroughly firm; the foundation of a business must be so wisely planned that it will resist the hardest pressure. Business engineering, more than management, supplies the plans and policies of a business enterprise that will enable it to meet the most severe competition. Business engineering so plans an enterprise that costs will be found less than the income, and that, therefore, a reasonable profit will accrue to those who took the risk and contributed the engineering skill.

The haphazard conduct of a business may sometimes, by good fortune, keep the enterprise intact. But this is one chance in a hundred. Whereas, business engineering will reverse these chances and give security, no matter how severe the storms may be.

Hundreds of business enterprises go by the board each year for the need of good management. In reducing this loss and giving better protection to our credit transaction, good management must be the first step. To develop skill in management it is essential to study the elements of success and how they are obtained, and business engineering is a step forward from business management.

A workman spilling silicate of soda on open cuts or freshly formed scars, will experience the same sensation as if he had allowed soap to get into the wound. Silicate of soda, while it is not poisonous, is a strong detergent and like soap, under these circumstances, has an irritating effect. Silicate has a tendency to soften and reopen partly healed wounds. If dirt then enters, infection is likely to take place. The way to avoid this disagreeable possibility is to protect all wounds by preventing silicate from touching them. Vaseline or olive oil will be found very helpful. A bandage and one of these is better still. Should silicate get into a cut, or wound, it should be washed thoroughly and promptly with warm water.—P's & Q's.

Efficient Soot Removal Assists Paper Production

Soot Deposits on Boiler Tubes Increase Coal and Maintenance Costs

By JAMES T. BEARD, II

THERE are few things more detrimental to the continuous operation of a paper mill and of a paper machine, in particular, than sluggish boiler capacity. By "sluggish" I mean slow acting. When a sudden load is thrown on the boilers, perhaps by opening the live steam into the dryer rolls, the boilers are slow to respond to the efforts of the fireman, the steam pressure drops because the boilers do not make steam as fast as it is being used. When the load is suddenly thrown off the boilers, due to a sharp reduction in the steam demand, the boilers, likewise, do not respond quickly. They continue to generate steam at an increased rate, although the draft has been cut down, and the excess steam blows off the safety valve—a total loss.

Conditions such as described are not favorable to economical paper production. Due to the variable steam pressure, there may be and sometimes is a variation in the machine speed. If the paper machine does not run up to speed, there is a falling off in paper tonnage. Over a period of time this production loss may reach quite a considerable figure.

One of the chief causes of sluggish boiler capacity is soot. Deposits of soot are formed when furnace gases strike the metal surface of the boiler drum and tubes. The gases are thus chilled by contact with the metal, which is very much cooler. If the gases are not completely burned by the time they reach the tubes the chilling effect stops further combustion, because their temperature is reduced below the point at which they will burn.

The result is, therefore, just the same as when a cold iron is held in the yellow flame of an oil or gas lamp. The "lamp black" which is deposited on the cold iron is the same as the soot which is left on the boiler tubes.

How Soot Reduces Combustion Efficiency

Soot and other deposits on the boiler tubes form an insulating layer, which prevents the hot gases from coming in direct contact with the metal heating surfaces of the boilers. While the boiler metal itself is a good conducter of heat, the sooty film around the tubes conducts heat very reluctantly. Inasmuch as the furnace gases, therefore, pass through the boiler setting in a very short time at the most, they cannot give up much of their heat to the water in the boiler if it is insulated by such a slow heat-conducting medium as a soot coating. These gases must, consequently, pass from the boiler into the uptake without giving up much of their heat.

Flue gas temperatures under such condition are abnormally high and considerable of the heat of the coal is carried up the stack. This waste is entirely prevented by maintaining the tube surfaces clean and free from soot.

The accumulation of soot and coal dust in the tube passages gradually clogs up the spaces between the tubes and prevents the free flow of the hot furnace gases through the boiler setting to the stack. Resistance is thus introduced in the path of the gases. In order to maintain a constant flow of gas through the setting, therefore, the pressure drop through the setting must be increased. In other words, if the capacity of the boiler is to be maintained the draft loss through the boiler must be increased.

An indication of such soot deposits between the boiler tubes is given by an increase in the reading of a differential draft gauge, one end of which is connected to the boiler uptake and the other end to the fire box. The gauge records the difference between pressures at these two points.

It must be borne in mind, however, that other faulty conditions within the boiler setting may nullify the effect of choked gas passages, in which cases the draft gauge might show a normal reading. If the tubes were choked with soot and the baffles were badly broken, for example, the greater resistance to the gas flow offered by the obstructed passages would be counteracted by the short circuit and less resistance afforded by the broken baffles.

Although the draft gauge, recording the drop through the boiler, might indicate normal conditions, yet in such a case, the steam flow meter on the boiler front would immediately indicate that the boiler was developing far below its normal capacity and that something was radically wrong inside.

The restriction of the gas flow by soot deposits and the consequent necessity for a greater pressure drop through the boiler setting make a higher furnace pressure essential in order to force the gases to the stack. Furnace pressures are undesirable from an operating and maintenance standpoint. Where they are excessive, they force the hot furnace gases into every crack and crevice of the boiler setting. Not only do they materially lessen the life of the furnace lining, but they may cause a weakening, or even

collapse, of the structural ironwork supporting the dutch oven or the boiler itself. Excessive repairs are always necessary under such operating conditions.

While the accumulation of soot deposits in most cases will not be sufficient to cause excessive furnace pressures, particularly at normal boiler rating, still during operation at considerable overload they may offer sufficient resistance to the flow of the furnace gases to make good operation difficult.

Where furnace pressures exist, even in a small degree, the suffocating fumes of coal gas contaminate the atmosphere in the boiler room and make it an unpleasant and disagreeable place to work. Proper furnace drafts are indicated by a draft gauge, one end of which is connected to the fire box and the other end left open. Readings on the minus side of the zero mark indicate "draft" and safe operating conditions. Readings on the plus side of zero indicate "pressure" conditions, which may call for attention and the proper remedy.

A Result of Soot Accumulation

Deposits of soot result in an actual loss, from the standpoint of combustion efficiency. This soot consists of carbon that has not been burned. Once it is deposited in the form of soot, it is no longer useful for the generation of heat under the boiler. While the percentage of actual loss in the plant that is well operated is very small, still there are some plants where conditions are really bad and the loss of heat in the form of soot is an appreciable proportion of the coal burned.

I have in mind one particular plant in New Jersey. Its equipment included five 375 H.P. Stirling boilers. During the war the productive capacity of the plant had been so increased that the steam demand placed what appeared to be an excessive burden upon the boiler house. The plant management placed an order for a new 375 H.P. boiler. Investigations made at this time, however, showed that the boilers were operating at from 40 to 50 per cent efficiency and that they were generating nowhere near their rated capacity in pounds of steam per hour.

There were many things wrong in this plant. Chief among these was an accumulation of soot deposits, which tended to indicate that no attempt had been made to keep the external heating surfaces clean. The passages between the boiler tubes were literally clogged with soot, dust and dirt. Very little of the hot furnace gases could get through the boiler at all, and when attempts were made to force the boilers by speeding up the draft fan, a pressure was built up in the furnace, filling the firing floor with choking fumes of coal gas and gradually burning up the furnace lining and brickwork. The cost of repairs was tremendous.

But that was not all. The coating of soot around the boiler tubes formed an almost perfect insulation for the water in the boiler from the hot gases in the furnace. The little gas that could filter through the setting carried most of its heat energy up the stack. Flue gas temperatures were sometimes as high as 900 deg. F. The amount of water evaporated by the boilers was not sufficient to carry the plant load, even though it was converted into steam with a tremendous waste of coal.

Strange to say, each boiler unit was equipped with a very fine permanent installation of soot blowers. When the chief was questioned, he said the tubes were blown twice a day. He was asked to go into the boiler room and direct the tube blowing in No. 1 boiler, with the idea of instructing his men how to do the job correctly. He tried to open the steam valve, but without success. Even a 12-inch Stillson wrench would not budge it.

The chief was dumfounded. He had not intended to deceive the management. He actually thought his instructions were being carried out to the letter. But the incident was a good lesson to him, and from that day on, he personally supervised the tube blowing and spent much of his time in the boiler room directing his men.

After the tubes had been thoroughly cleaned on all the boilers, the efficiency and capacity of this plant showed a very marked increase. Furnace pressures were practically eliminated; flue gas temperatures were greatly reduced; less coal was burned; and the cost of furnace repairs was reduced to a minimum. It was eventually possible to carry the entire plant load on four boilers instead of staggering along with five crippled units. And, after some negotiations, the order for the new boiler was canceled.

This extreme case is cited to show the effect of an exaggerated accumulation of soot deposits on boiler heating surfaces. Small soot deposits have the same effect in a less marked degree.

Old and New Plants Compared

In modern plants where care has been used in the design of the combustion space of boiler furnaces, excessive soot deposits are largely eliminated. Furnace design is a subject too technical to discuss here. It is sufficient to say that the volume of combustion space, shape of furnace, location of arches, etc., are involved in the problem. And that the design of a furnace depends upon the grade of coal that is to be burned, whether it burns with a long flame or a short flame, whether it is hard coal or soft coal, whether it is powdered coal or oil.

In existing plants, no opportunity is offered for elimination of soot deposits by alteration in furnace design. There are many plants today which were built before much was known about the subject. In these plants the boilers are set low. There are also other plants where the character of the fuel burned is entirely different from what it was when the plant was

designed and the original furnace is, therefore, not best suited to the conditions.

In the operation of average paper mill power plants, therefore, soot deposits must be contended with. In some cases they will be excessive; in others, they will not be so troublesome.

The presence of soot deposits on the boiler tubes is indicated by high readings on the flue gas thermometer, or pyrometer, as the case may be. Even when the differential draft gauge fails to show an abnormal reading, the temperature record of the flue gases will usually give warning of incorrect conditions within the boiler setting. There may be cases, however, where a large excess of air, due to poorly conditioned fires, lowers the temperature of the furnace gases so that the final temperature reading in the uptake is normal, although the tubes are fairly well coated with soot. Such a coincidence, however, would be indicated by an abnormally low reading on the CO_2 recorder, and when that condition has been corrected the flue gas temperature would again become excessive.

High flue gas temperatures, however, do not positively indicate soot on the boiler tubes. Such temperatures may be due to an insulating scale within the tubes, deposited there by the evaporation of impure feed water. Or they may be due to broken baffles in the boiler setting, resulting in a short-circuiting of the hot gases direct from the furnace to the flue. The value of a temperature indicator for flue gases, however, is not impaired by these limitations, inasmuch as it does indicate improper conditions, which may be subsequently traced down and corrected by the process of elimination.

Soot deposits are formed when hot gases of combustion, which have been partially but not completely burned, come in contact with the relatively cool metal surface of the boiler. The chilling effect stops the combustion and causes carbon to be deposited on the metal. This accumulation is gradual but continuous.

In new installations this "sooting" tendency has been reduced, if not eliminated, by setting the boiler high enough above the grates to allow ample combustion space for the furnace gases. By this arrangement the gases are completely burned by the time they reach the boiler tubes and no free carbon is deposited.

In old installations, and where high settings are impossible or impractical, soot deposits must be considered and provision must be made for their removal at regular and periodic intervals.

The Use of Mechanical Soot Blowers

The usual and most common method of scouring the soot from the tubes is by means of the steam hand lance, which is, of course, better than nothing. But if it is to be done at all, it should be done thoroughly and at regular, stated intervals.

It is much better to break one man in on the job, teaching him to do it right, than to let every Tom, Dick and Harry try their hands at it. What is everybody's business is nobody's business and in nine times out of ten isn't done at all.

With a hand lance, however, it is not possible to reach all the tube surfaces efficiently with an effective scouring action of the steam jet. Mechanical soot blowers, permanently installed in the boiler setting, are far more effective and much easier to operate. There are many different designs on the market and each has its good points. When used regularly they practically eliminate the preventable waste and undesirable operating conditions caused by sooty tubes.

Where soot blowers are newly installed, or where their more or less indifferent use has resulted in an accumulation of soot on the tubes, it may even be necessary at first to remove them by hand scraping. Sometimes they become baked so hard that this is essential. Once they are removed, however, it is a simple matter for the soot blower to prevent their subsequent formation, and clean tube surfaces may be maintained without again resorting to hand labor.

It is hardly necessary to call attention to the fact that the mere installation of soot blowers, no matter how complete or how good, will not of itself prevent the accumulation of soot deposits. Witness the New Jersey plant referred to in the early part of this story. The human element must also be considered.

In this respect the paper mill is in no better position than any other industrial plant. Men, after all, are human, and firemen are no exception to the rule. If a job is easy to do, it will probably be done fairly well. If it is hard to do, it will be half done, perhaps. If it is very difficult, the chances are that it will not be done at all.

It is, therefore, very important that an installation of soot blowers be made easy to operate. The valves should be placed within easy reach. The operating chains, if there are any, should be convenient. If you are going to depend upon blowing with a hand lance, the job is much more difficult and the results will be far less satisfactory.

There should be a schedule in every plant indicating the time the tubes should be blown. But this is not sufficient. Even if the chief knows he has delegated a reliable man to do the work, he should make it his business to check him up from time to time. And it wouldn't hurt if the superintendent checked the chief up occasionally. The job of making paper economically is important. Every executive in the mill is, naturally, interested. And the assurance of clean boiler tubes is a long step toward the attainment of that end in the boiler house.

He got so in the habit of laying his mail on the desk to be opened later, that important letters were frequently side tracked, and when he got around to attend to them, the time for handling the matter to advantage had gone past.

Chemistry of the Sulphite Process—VII

Effects Producible by Variation in Measure

By R. N. MILLER[1] and W. H. SWANSON[2]

IN AN earlier paper,[3] it was shown that in a relatively fixed system such as is found in mills operating the sulphite process, the variations in product that could be produced by variations in acid concentration were small as compared to those that could be produced by variations in temperature when operating at constant pressure. The experiments recorded here were carried on to develop the variations that could be produced by pressure variations when the range of temperatures was constant. The range of pressures selected covered those in common commercial use and one, at 100 pounds, far beyond the commercial range.

The wood was well seasoned white spruce. Eighty-five pounds of standard chips averaging approximately five-eighths of an inch in length were used in each cook.

The acid was prepared from high-grade calcium hydrate and from sulphur dioxide received as liquid in cylinders. In all cases, the acid contained the liquid and gaseous relief from a previous cook, and the analysis was approximately 5.50 per cent total sulphur dioxide with 1.20 per cent combined sulphur dioxide. Fifty-five gallons were used in each cook.

Charges were cooked by direct steam, with side relief up to 137°-138° C. Top relief was then used to the finish, the last 15 minutes being employed to relieve the pressure down to about fifty pounds before blowing. The temperature was brought to 110° C. in 1½ hours and a uniform rise followed to 148° C. in 8½ hours.

The yields of pulp and cellulose and the chemical composition of the pulps[4] are shown in Table 1. Cellulose as recorded here refers to the residue left after completion of the Cross and Bevan chlorination treatment as practiced at the Forest Products Laboratory. The yield of cellulose is calculated by multiplying the percentage cellulose content of the pulps by the percentage yield of oven-dry screened pulp from the wood. It is apparent that there is no great variation in the yield either of screened pulp or of cellulose throughout the cooks. Cook No. 3,071, at the extreme pressure of 100 pounds, shows only a small decrease in yield as compared with the others.

All the pulps were strong, as can be seen from the record of strength tests in Table 2. There were certain differences detectable by one experienced in the handling of pulps, but they are not expressible in figures and are not shown by analysis or test. Judged by feel, the pulps produced at higher pressures were somewhat better cooked. In view of the limited knowledge now available, no special significance can be attached to the strength results obtained in cooks Nos. 3,051 to 3,071, as compared with the others of the series.

The extent to which variations in pressure influenced the concentration of the active sulphurous acid can be seen from Table 3. At 140° C., the lowest temperature at which all cooks were on dry gas and at equilibrium at the maximum pressure, the difference in concentration between the acid in cook No. 3,050, at 65 pounds pressure, and in cook No. 3,071, at 100 pounds pressure, is only 0.67 per cent active sulphur dioxide as sulphurous acid. The difference increases to 0.92 per cent at 145° C. and represents nearly the maximum obtainable by the difference in pressure between these two cooks. Between cooks Nos. 3,057, at 80 pounds, and 3,071, at 100 pounds, the difference is only a little over ½ per cent.

It is evident, then, that acid concentration differ-

TABLE 1
Yields and chemical composition of the pulps

Cook	Pressure, pounds per square inch	Yield of screened pulp, per cent	Lignin in the screened pulp, per cent	Cellulose in the screened pulp, per cent	Yield of cellulose from the wood, per cent
3050	65	48.3	1.7	94.6	45.7
3051	70	48.4	2.5	96.4	46.7
3056	75	48.4	1.1	96.1	46.5
3057	80	48.2	1.2	95.9	46.2
3071	100	47.7	1.5	95.3	45.5

TABLE 2
Strength tests—ball mill method
(Numbers at head of columns refer to minutes in ball mill)

Cook No.	Pressure, pounds per square inch	Bursting strength, points per pound per ream				Breaking length, meters			
		20	40	60	80	20	40	60	80
3050	65	0.75	0.92	1.05	1.00	3965	4714	4236	3835
3051	70	0.60	0.82	0.90	0.87	2417	3271	3343	3398
3056	75	0.70	0.98	1.06	1.10	3674	3917	4254	4420
3057	80	0.71	0.94	1.05	1.04	3966	4459	3961	4069
3071	100	0.54	0.83	0.95	0.83	2310	2799	3465	2913

TABLE 3
Composition of liquor during cooking

Cook No.	Pressure, pounds per square inch	Composition of acid at 140° C.				Composition of acid at 145° C.			
		Total SO_2 per cent	Free SO_2 per cent	Combined SO_2 per cent	Excess SO_2 per cent	Total SO_2 per cent	Free SO_2 per cent	Combined SO_2 per cent	Excess SO_2 per cent
3050	65	1.41	1.22	0.19	1.03	.84	0.74	0.10	0.64
3051	70	1.58	1.35	0.18	1.17	0.93	0.83	0.10	0.73
3056	75	1.89	1.59	.30	1.29	1.39	1.17	.22	0.95
3057	80	2.11	1.77	.34	1.43	1.36	1.18	.18	1.00
3071	100	2.24	1.97	0.27	1.70	1.84	1.70	0.14	1.56

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[3] Technical Association Papers, Series VII.

[4] Chemical analysis by Mr. M. W. Bray and J. W. Natwick.

ences, whether produced by temperature variations at constant temperature rise, have no great influence upon the yield or the strength of the pulp.

The results recorded here and previously show that the influence of temperature on the yield and quality of pulp is far greater than any that can be produced by variations in acid concentration obtainable within the permissible range of mill pressures.

Waste in the Pulp and Paper Industry

Using Junk Machinery

By B. T. McBAIN

THIS fault probably hits more people in the pulp and paper manufacturing business than any other. It can probably be truthfully stated that there is some junk machinery in use in every old mill in America, and by this use of America I mean the whole of North America.

"What is junk machinery?"

I was asked this at the last convention of the American Paper and Pulp Mill Superintendents' Association. I say any piece of machinery in use which is inefficient and not economical in operation is junk, where there can be found on the market something which will do the same or more work with a saving of 25 per cent or more per annum of its cost.

I also say that machinery builders are in a measure to blame for this, for if they were up to the minute in salesmanship they would agree among themselves to add enough to the price of the new article to make an allowance of 25 per cent on the old.

Recently at Fort Edwards, we bought a new truck, five-ton size, I believe, but that is not pertinent. The purchasing agent traded in an old three-ton truck and was allowed 25 per cent or 30 per cent of the value of the new one, or $1,200 to $1,500, although the truck manufacturer's agent said the old truck was not worth more than $300 and his firm would have to sell it for that price to get rid of it.

The new truck arrived, and the bill was paid. Then the old truck was bought by an interested party for $300.

It was junk when it was traded in, and it was junk when it was bought back and put into use.

But what would have been the price of the new truck without a trade?

A sewing machine agent asked $75 for a certain well-known brand of sewing machine, offering $25 for the old one. But said my wife, "We haven't any old one. What will a new one cost without an old one in trade?" He sold her the machine for $50.

So I say that many mills would not be using junk machinery, such as old bilge pumps that Noah may have had in the ark, if something were offered in trade.

But, in any event, if a check-up were made of all the junk from boilers and steam engines, water wheels, and other power machinery to the paper machinery itself, including out of date shafting, speed changing jack shafts and pulleys, improperly designed drives, pulleys and belting, in many mills enough could be saved in one year to replace the worst of it and in two or three years to replace it all with up-to-date power saving and product increasing equipment.

However, when it comes to the paper machine itself, there is a limit to where the changing should be carried, for the cost of renewing out-of-date junk parts of some machines, together with the loss of time and product, might come so near to the cost of purchasing and installing an entirely new machine, capable of doing so much more and better work than the rebuilt one, that it would be better to junk the whole thing, but if this is done and the old one is not bid in by the new machine-building firm for the metal in it, the industry would be benefited directly and your own mill benefited indirectly, if the junk parts were broken beyond recognition and re-use, like a far western paper manufacturer after a fire, saw that his old one was treated. The junk might be used again. It would always lose money wherever erected, but while the new owners are finding it out it is a thorn in the flesh.

Let by-gones be by-gones, and junk machinery should be so considered.

The Busy Loafers

Observation indicates that at least nine times out of ten the overworked man is the inefficient man. Executives have been known to fritter away their time all forenoon and the early part of the afternoon. Suddenly around three or four o'clock, looking at their watches, they awaken to the fact that there is a great deal of work unfinished. Then they rush through things helter-skelter, and it's only natural that many things should be done wrong.

The efficient executive is one who manages his own time, and the executive who manages his own time wisely enjoys leisure for purposes of constructive thinking.

The man who talks boastfully about being compelled to work overtime night after night doesn't deserve praise for his industry, but a kick in the shins for his inefficiency.—Lombard Letter.

Wood Preparing Equipment

By HARRY E. WESTON

Assistant Professor of Pulp and Paper Manufacture, The New York State College of Forestry, Syracuse, N. Y.

This is the last installment of Mr. Weston's article on Wood Preparing Equipment.

Chip Crushers

CHIP crushers or disintegrators are now commonly employed to break up the over-size rejections from the chip screens. Formerly it was ordinary mill practice to locate the chip crushers between the chippers and chip screens and in this way pass all of the chips through the crushers. Such practice tended to increase the percentage of sawdust and has therefore been generally discarded. In modern installations the crushers generally follow the chip screens. In this way the sawdust made during the chipping operation, as well as the portion of chips suitable for cooking, are removed in the first screening. The oversize rejections are thus carried to and thru the chip crushers, where they are broken down in size and again conveyed to the chip screens for further screening, to be accepted as chips or rejected as sawdust.

Several types of crushers built upon slightly different principles may be found in our mills operating at varying degrees of efficiency. The "Carthage" and "Lombard" crushers will illustrate two of these types.

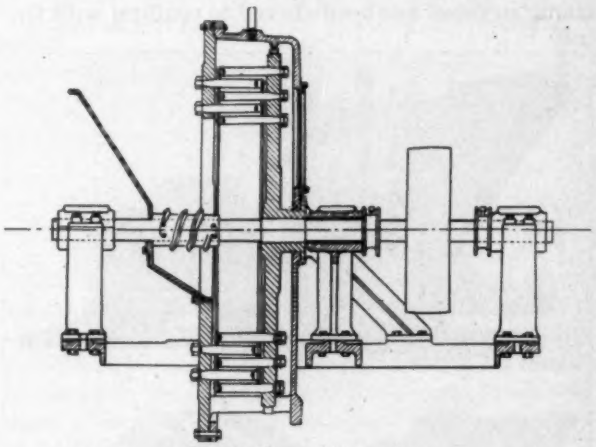
The construction and operation of a Carthage crusher is illustrated in the following cut. It has been built in two sizes, 4′ and 5′, to meet the demands of different mills, and is operated at varying speeds, depending upon the production desired.

The frame is of heavy cast iron, and to it the case (also of cast iron) is bolted. The case has a heavy flange on the face side, to which a cover plate is fastened. This cover plate, made in two parts to facilitate inspection, supports the feed spout and the stationary rings and pins. There is also a large opening in the cover for the feed spout through which the chips enter the crusher.

The disc, carrying the rotating pins and rings, like the chipper, has a band of wrought iron shrunk on the periphery as an additional safety factor. It is necessary that the rim of the disc and the inside of the case have just a running clearance to avoid the accumulation of chips back of the disc.

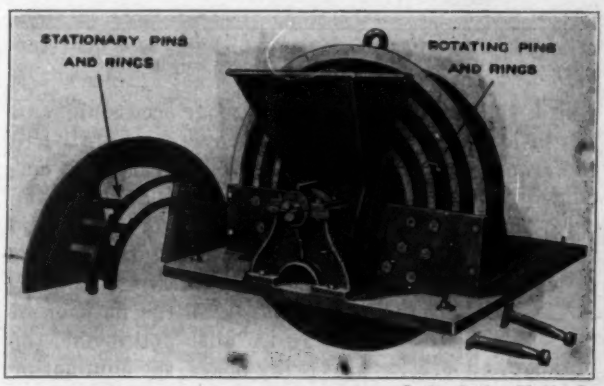
The shaft, carrying the disc, also carries a feed worm inside the spout. This worm, either left- or right-hand, depending upon direction of motion of the rotating disc, prevents the plugging of the spout with slivers. The crusher is right-hand if the disc runs clockwise when seen from the spout side and left-hand if it runs counterclockwise when seen from the same position.

The feed spout, also a casting, is attached to the cover by means of cap screws. The pins, forming three circles on the disc, two circles on the cover and spaced equally distant according to the size of chip desired, are of wrought iron. Special provisions are employed to keep them in position. Likewise, increased strength is derived by fitting a wrought iron band on the outside end of each circle of pins.



The Carthage chip crusher

The speed ranges approximately from 400 R. P. M. to 700 R. P. M., depending on size and capacity desired. A machine of this type requiring 25 to 30 H. P. to operate and running at 600 R. P. M. will handle approximately the over-size chips from 100 to 250 cords of wood per day.



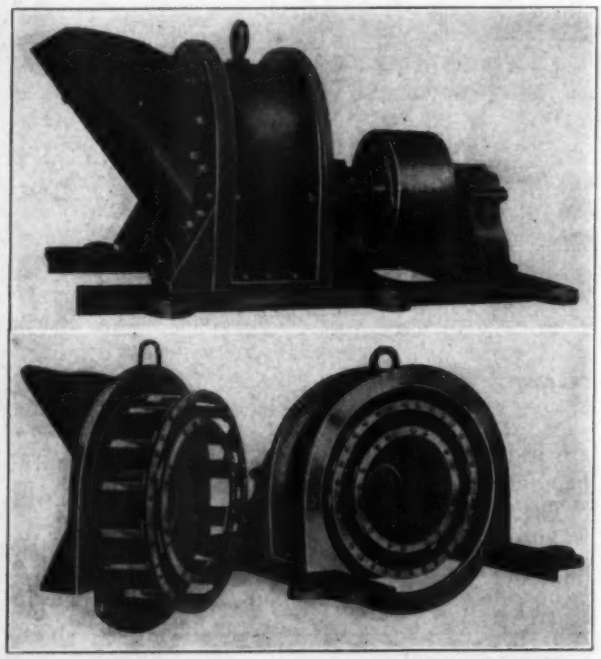
Courtesy Carthage Machine Co.

Carthage chip crusher—showing rotating disc and pins

The principle involved in operation is very simple. The chips are dumped into the spout and forced to the center by the movement of the worm attached to the rotating shaft, where they drop between the stationary and the rotating pins or fingers. The large, oversize chips, splinters, slivers, etc., are broken up and

discharged thru the bottom of the machine to a conveyor that carries the material back to the chip screen for another screening.

The new improved Carthage chip crusher differs somewhat in design, although the principles of construction and operation are fundamentally the same. The disc (36½ inches in diameter) is considerably smaller in diameter than either of the older types, but has a similar wrought iron band shrunk on its periphery, while pins are of the same design and are attached in the same manner—three circles on the disc and two circles on the cover. The design of the frame and case has been altered to conform with the



Courtesy Carthage Machine Co.

Two views of improved Carthage chip crusher

rest of the changes and to give easier accessibility to the inside working parts. The covers, one fitted to the front and one to the back of the case, are machined to fit machined recesses in the flanges of the case. Each cover is held in place by a few bolts, the removal of which permits easy access to the interior of the crusher.

The real difference in design is in the position of the shaft in its relation to the disc and spout, the number and location of bearing boxes, the elimination of the worm, and in the type of spout. These differences may all be noted by a careful study of the accompanying illustrations.

The Lombard crusher consists primarily of two parts—a revolving part or rotor to which is attached a series of swinging hammers, and a fixed part or casing to which is attached a series of cast iron discs, each carrying several swing hammers and keyed to a large diameter shaft. Its size and weight gives the flywheel effect necessary to maintain constant speed when under full load. The swing hammers, carried on hard maple bushings, are drop forgings cast with lugs to engage holes in the discs. The bushings are soaked in linseed oil and lubricated with graphite when placed in position on the hammer lugs between the hammers and discs to insure smooth and flexible operation of the hammers.

The cast iron casing is constructed in two sections to provide access to the rotating element. A number of openings are provided in one section of the casing to receive two rows of stationary teeth. These teeth are of machinery steel and are held in place by set screws in the front casing of the crusher. The two sections of the casing are attached to the cast iron bed plate, which is in turn fastened securely to any type of foundation.

The shaft extends beyond the casing on either end for a sufficient distance to obtain satisfactory bearing surfaces and is carried in ring oiling bearings.

The Lombard crusher is made in three sizes, 24″, 36″ and 48″. It is designed to operate at high speed —1,000 to 1,400 R. P. M.—so as to get the breaking effect by the sudden impact of the hammers.

The capacity of such units will vary from 75 to 150 cords per ten hours, with the power requirements for each individual size about as follows:

24″ crusher—10 to 12 H. P.
36″ crusher—20 to 22 H. P.
48″ crusher—30 H. P.

The construction and operation of this type of crusher is clearly indicated in the accompanying illustration. The chips enter the crusher thru the opening in the top, are struck by the hammers and crushed as the hammers pass between the stationary teeth, and are discharged thru the opening in the bottom.

Chip crushers of slightly different designs than those described are also in use. Most of them, however, differ simply in detail and will not, therefore, be discussed.

Rechippers

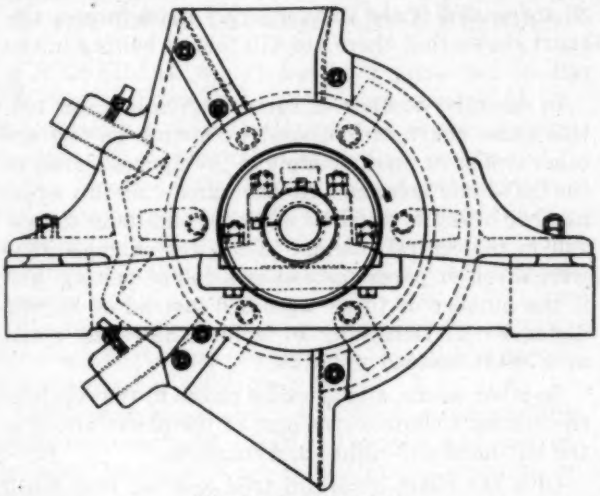
In some installations, due to the character of the wood used, it is often desirable to provide a rechipper to recut the large pieces, such as slivers, coming from the chip screen.

The design of all rechippers is fundamentally the same and most of the machines have much in common. One of these is the well-known Lombard rechipper, which consists of a rotor, casing, knives and drive.

The disc rotor, 30 inches in diameter, has mounted on its periphery a set of eight cutting knives, which can be removed for sharpening and resetting, and is keyed to a heavy shaft. Bed knives, as in the case of the chipper, are used in conjunction with the knives on the rotor. Three of these knives are set in the front housing of the casing and are adjusted with the knives of the rotor so that the slivers, as they pass thru the rechipper from the inlet connection at the top of the unit to the discharge, are cut by them

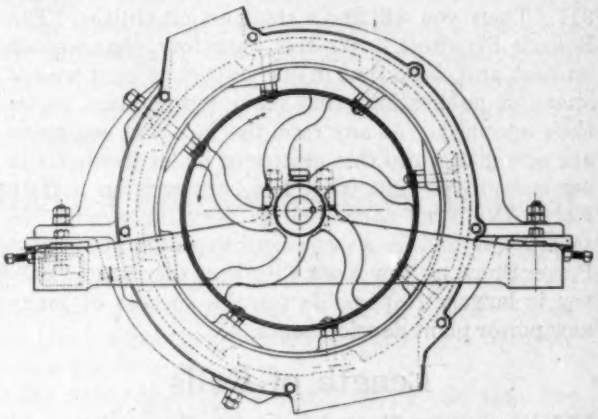
during the operation. A substantial sub-base is provided for supporting the machine.

This unit has a capacity of 10 cords per ten hours when operating at a speed of 400 R. P. M. and requires approximately 5 H. P. Most rechippers handling approximately the same quantity of material require about the same amount of power and are driven at a speed ranging from 400 to 600 R. P. M.



The Lombard Crusher

The uniform chips as standardized by the individual mill, now ready for cooking by any of the chemical pulp making processes, are conveyed to the chip bins where they are held in storage until needed for the filling of the digesters. The value of the raw material has been considerably increased by the operations which have already been completed. Careful supervision of all work pertaining to wood preparation is absolutely essential for best results in the pulping operations which follow. Too much emphasis cannot be placed on the importance of this phase of pulp mill work if the plant as a complete unit is to be operated at its greatest efficiency.



The Lombard Rechipper

Pointers for the Engineer

By W. F. SCHAPHORST, M. E.

92.7% Boiler Efficiency

MOST paper mill engineers have probably read by this time of the remarkably high overall efficiency obtained by the use of a water wall furnace at the Hell Gate station of the United Electric Light & Power Company in New York City.

Not only is it claimed that an efficiency of 92.7 per cent was obtained, but the boiler was forced to operate at 603 per cent of its rating.

It is claimed that this is both a new record of efficiency and that the boiler produces more steam per single unit than any other boiler in the world. Both of these claims are probably true.

The tests were very carefully conducted with competent engineers in charge. One of the tests, for example, shows that the superheater and boiler together absorbed 84.6 per cent of the total heat in the coal. In addition to this the economizer absorbed 8.1 per cent. Add these together and it will be found that the total loss was only 7.3 per cent, which is surely very small. One authority points out that 3.1 per cent of this 7.3 per cent was due to moisture from the combustion of the hydrogen in the fuel, which loss is unavoidable. In other words, the boiler is so efficient that the computed total controllable loss is only 4.2 per cent. All of the other losses are unavoidable.

One of the remarkable features was that the fuel gas temperature was reduced down to 193 deg. F. This was accomplished by the use of a very large economizer. It is easy to figure that the difference between the fuel gas temperature and the temperature of the steam was therefore only 74 deg. F.

The walls of water were installed in the furnace principally to cut down the cost of maintenance. Increased efficiency was considered a secondary matter. It resulted, however, in this remarkably high performance.

A Flywheel for Boilers

ONE of the leading power plant publications came out in an editorial not long ago and admitted that they had never heard of a "flywheel for boilers." They described a recent Swedish development which is very interesting but which is really nothing more or less than added capacity to a boiler. It does about the same thing that a first-class boiler feed regulator

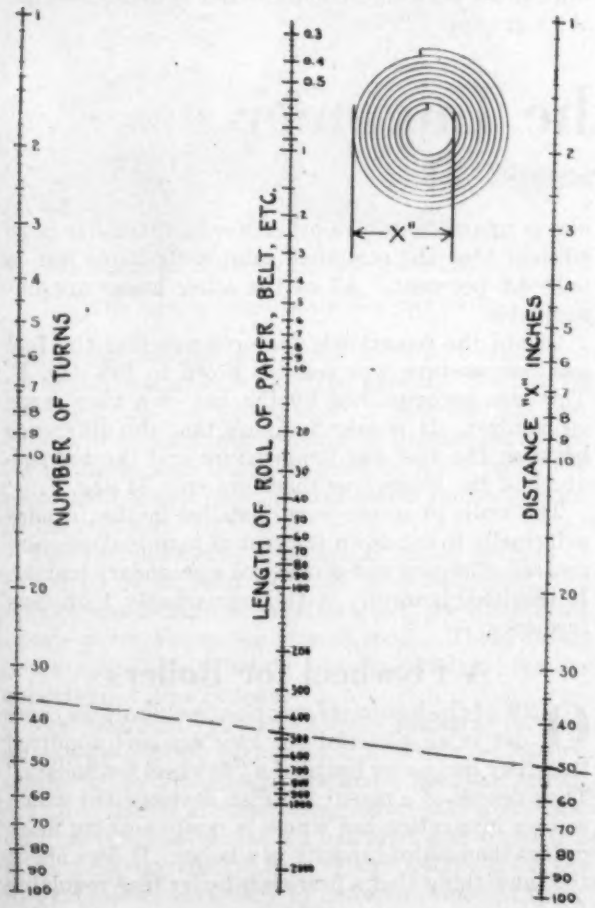
will do on an ordinary steam boiler. The writer has described boiler feed regulators of this type in THE PAPER INDUSTRY and has himself made use of such expressions as "heat flywheel" and "boiler flywheel." See the October, 1922, number, for example, page 917. There you will find a short article entitled "The Boiler's Flywheel." We feel, therefore, that we can sit back and claim that in one respect at least we are ahead of publications that make power plant topics their specialty. At any rate, the fact that engineers are now going into this matter of boiler flywheels in earnest proves that what has been written in THE PAPER INDUSTRY cannot be so very far wrong. In fact, I was told by a prominent engineer at the last Power Show in New York City that the paper industry is largely responsible for the success of many new power plant developments.

Length of Rolls

THE paper mill engineer as well as others employed in the paper industry will find this chart useful for determining the length of any roll such as a roll of belt, of paper, of cloth, etc.

To determine the length of belting or other rolled-up material, it is simply necessary to measure the distance "X" and to know the number of turns.

Connect the number of turns in the left-hand column with the distance "X" in the right-hand column and the length of roll is immediately found in the central column.



For example, if we have a roll of belting containing 36 turns and if the distance "X" is 50 inches, the chart shows that there are 470 feet of belting in the roll.

In case the number of turns is greater than 100, this same chart can be used by simply adding another cipher or another digit to the figures shown in the left-hand column. At the same time an equal number of digits must be added in obtaining the result in the central column. Thus, for example, if it were a roll of paper instead of a roll of belting, and if the number of turns were 360 instead of 36, the distance "X" remaining 50 inches, the result would be 4,700 ft. instead of 470 ft.

In other words, add as many places to the result in the central column as the sum of the places added in the left-hand and right-hand columns.

Give the chart a careful trial and see how much quicker it is than long-hand computations. At least, it will be found useful for checking one's long-hand figures.

Money Saved by Ball Bearings

AN INSTANCE has been brought to the attention of the writer where, by the installation of ball-bearing hangers, and the installation of ball bearings on line shafting, 25 per cent less power is now required than formerly. The entire plant has been equipped with ball bearings. A report concerning this plant contains the following interesting information in one paragraph:

"One section supplied by a D. C. generator required between 1,600 and 1,800 amperes at 130 volts when babbitt bearings were used. The same load is now handled with a current of 1,200 to 1,300 amperes, which shows that the minimum reduction is about 25 per cent of the original load. The power saved per day is 468 kilowatt hours, which in a year's time at $.02 per kilowatt hour is worth $2,808. As this section of the plant takes about one-third of the total amount of power used, the saving from the use of ball bearings in the entire plant would be approximately $8,424 per year."

According to the manufacturers, this report shows that the saving due to the installation of ball bearings will pay for the complete installation of ball bearings in less than two years.

We also read and hear much criticism concerning the life of ball bearings. We are given to believe that ball bearings are short lived. The manufacturers of the above ball bearings, however, claim that their bearings have been used steadily for 10 years. In this connection they say that ball bearings "cost more than babbitted bearings, of course, but they pay back

the difference in cost, in power saving alone, in less than two years' time, and after that they are earning a clear profit."

Some Soot Cleaner Cost Figures

AN OFFICIAL report has been presented to me which shows that a net annual saving of $2,385.20 resulted from the installation of soot cleaners on eight 500 H. P. vertical water tube boilers.

The report shows that soot cleaners reduce the fuel consumption 6 per cent, that they reduce the cost of labor, and that they pay for themselves every nine months. In other words, they pay 133 per cent interest.

The boilers are cleaned three times every day. By so doing, the fuel gas temperature is reduced as much as 120 degrees to 160 degrees Fahr.

The fuel saving amounts to $2,520 per year and the saving in labor $495. Subtracting the first cost of the soot cleaner, the net annual saving amounts to $2,385.20.

The boilers are cleaned three times daily at 9 a. m., 2 p. m. and 11 p. m.

The first cost of the cleaners was $1,800 completely installed, and it is estimated that they will last at least five years.

Mechanical soot cleaners are vastly superior to the old hand lance method of cleaning, although, to be sure, the hand lance method is much better than no method at all.

Removing Static Electricity

POWER transmission belts sometimes give trouble due to static electricity. Disastrous figures and explosions have been caused by static sparks, usually in dusty and gaseous surroundings.

However, static can usually be avoided without great difficulty. One of the ways is to keep the belt "damp," and as good a way as any is to use a dependable belt dressing which will work its way through the belt and keep it nice and soft and pliable. Do not overdo the treatment, however, because by using too much dressing the belt is liable to slip and if the belt slips, static liable to be produced again, because static electricity is due largely to friction.

Friction, high-speed dry belts, dry air, surrounding iron structures, etc., are all contributory causes of static electricity, but friction is the principal cause, and the principal thing to eliminate, therefore, is the belt slip.

If the static electricity is not stopped by this method it can be lead away through a copper wire by "combing" it off the belt by means of fine copper wires suspended so as to touch the belt at the mid-point between the pulleys. Also allow the ends of a comb to touch the bottom of the belt while running, but do not allow the pressure of the wires on either side to be great enough to scratch or injure the belt in any way. All that is needed is contact, not pressure. It has been determined experimentally that the best location for this comb is about half way between the pulleys.

The wires should then be grounded to a pipe or to anything metallic that runs into the ground, or run a wire into the ground for the express purpose of taking care of the static. No more trouble will be experienced.

Highest Efficiencies Ever Attained

IT IS generally believed that the Diesel oil engine produces a higher efficiency than any other engine, but that is not true. Over-all deficiencies of not much more than 35 per cent have been obtained with a Diesel engine.

The Still engine gives higher efficiencies than the Diesel engine, although admittedly the Still is a combination of a Diesel engine and steam engine, the steam being generated by means of the exhaust from the Diesel. An over-all efficiency of about 40 per cent has been attained from the Still engine.

By burning fuel under steam boilers and using the steam to drive steam turbines over-all efficiencies as high as 22 per cent have been obtained.

The mercury vapor turbine, which has been attracting considerable attention of late, will produce an estimated efficiency of about 30 per cent.

Airplane engineers of the four-stroke Otto Cycle give over-all efficiencies as high as 28 per cent.

Thus it is plain that we haven't much to boast about yet as regards over-all efficiencies in transforming heat into mechanical energy. Even with the Still engine, 60 per cent of the energy is lost. With the steam turbine 78 per cent is lost. Fortunately in the paper industry much of the exhausted steam can be utilized to advantage.

Oilless Bearings

A REMARKABLE performance for a bushing that was in constant service for twenty-two years and never oiled, has recently come to my attention. And what is just as remarkable, it showed a wear of only .0124 inches. The shaft diameter was $1\frac{7}{16}$ inches; R. P. M. 230; wear on shaft .003-.004 inches. The bushing was $5\frac{5}{8}$ inches long, $2\frac{1}{4}$ inches outside diameter and $1\frac{7}{16}$ inches inside diameter. For light machinery using loose pulleys oilless bearings often give excellent service and are worth investigating.

Yesterday is an outlawed account; tomorrow is a risky promissory note; today is real money—invest it.—Silent Partner.

Some people are like poor paper, they TEAR easily.

Cost and Factory Accounting—Part VIII

By H. M. GRASSELT
American Writing Paper Company

A UNIFORM product of highest quality standards constitutes the most effective insurance against idle machines. To attain this desirable state makes it necessary to continuously study the problems of manufacture. Raw materials used in the manufacture must of necessity be always of uniform quality and up to specifications to yield a uniform product. Economical production requires reduction of expenses to the very minimum and elimination of waste. Hence, the cheapest raw materials, consistent with the attainment of the required high standards, should be purchased and their utility and quality improved by skillful and uniform treatment throughout the various phases of manufacture. This policy of economical buying must not be carried too far, so that the materials prove to be unsuitable and their application injurious to the established quality standards.

The cost forms used in connection with all manufacturing activities are to provide permanent records of operating statistics and experiences for future comparisons. They give, further, an account of labor expenses and of every pound of material taken into production and thus represent an accurate and convenient aid to the application of corrective measures and progressive improvements.

It has been emphasized in the preceding chapter that, in order to permanently maintain a uniform product, materials and supplies necessarily must be of perpetual uniformity. Consequently, the procedure of inspecting and testing of all incoming raw materials has an important bearing on efficient manufacturing practices and economical costs. Plant economics and cost accounting are analogous, and it is, therefore, only natural that the cost department should be vitally interested in procedure and results of inspecting and testing, even if the execution of the work itself does not fall within the province of its activities.

Inspecting and Testing

The inspecting and testing of rags has been described in a preceding installment of this series. It is evident that the quality of rags has undergone a considerable change for worse since the war. (It has become so customary and convenient to blame everything on the war, so why exclude rags?) The person entrusted with handling of rags has to familiarize himself with some of the new characteristics of many grades of fabrics. For instance, artificial silk and shoddy are found today in some grades more frequently and in greater quantities than heretofore. The former is being used extensively in many fabrics, and since it is nothing but wood fiber, its presence is detrimental to the quality of rag half stuff. Shoddy in better grades of fabrics has the very same bad effect. Both show, of course, large shrinkages.

Very few fine paper mills manufacture their own sulphite or soda pulp. The manufacturer who has to buy his pulp in the open market, must determine whether he receives the invoiced weight, how the actual dry weight compares with the invoiced dry weight, and whether the quality meets requirements and specifications in every respect.

Pulp must be tested according to established and recognized methods. Sampling must be done in a systematic and uniform way and the test itself made in a regular testing oven. It is essential to sample the pulp at the time of unloading and to put the samples into the oven as soon as possible after sampling.

Pulp in rolls is sampled by the disc method in which the invoiced scale weight is used. Approximately 20 per cent of the car is to be sampled. Rolls selected for sampling should be bored four inches deep about six inches from each deckel end and in the center of each roll. The five discs next to the bottom of the hole are selected and the test derived from these samples is to be figured on the invoiced weight. Obviously, rolls for sampling should be taken from unexposed places in the car.

The strip method is also used in testing roll pulp. Here the scale weight at the time of sampling is used and about 10 per cent of the rolls, taken from various parts of the car, are selected for sampling. The chosen rolls should represent the total width of the machine on which they were made. If, for instance, the machine is four rolls wide, one-half of the rolls has to come from the inside and the other half in equal quantities from respectively the right and left deckel edges. The sample rolls are to be cut about two inches deep in one-and-one-quarter wide strips the entire length of the roll. Five strips should be taken from each roll sampled: the first strip to be the fourth layer; the second, one-half inch deep; the third, one inch deep; the fourth, one and one-half inch, and the fifth, two inches deep.

The disc method is also used in testing baled pulp. Approximately 10 per cent of the bales from a shipment are selected from well distributed places in the car. The weight of the entire car is estimated on the weight of the bales sampled, unless special arrangements are made with the shipper. The bales are to be bored three inches deep and ten samples taken in the following manner: one disc, two sheets from the wrapper; two discs, one inch deep; three discs, two inches deep, and four discs, three inches deep. Five

successive bales should be bored, one bale to be bored once only and in such a manner that the first hole is bored at the corner of the first bale, the edges of the cut being one inch from each edge of the bale. The following holes are bored in a diagonal position across the remaining four bales, uniformly interspaced so that the fifth hole appears in the fifth bale in the opposite corner in a position corresponding to the first.

In sampling wet pulp in sheets, packed in bundles, usually sixty bundles are selected from different parts of the car. About one-tenth of the bundles are taken from the top and near the door of the car. Strips, one inch wide, are then cut perpendicular to the deckel edge in sets of six. The first set is the outside of the bundle; the second, from the second layer, and so forth, until ten sets, one from each layer, have been selected.

Wet pulp in sheets on skids is sampled at a rate of twenty skids per car. The first sheet is to be selected the fourth from the top; the second about three inches from the top, and one sheet is taken from each of the first three layers. From these sheets strips about one and one-quarter inch wide are cut perpendicular to the deckel edge. It is necessary, however, that these strips represent samples from each sheet across the width of the machine. The position of the different layers on the skids indicates the number of sheets that represent the entire width of the machine on which they were made. For instance, sheets taken from a machine making three sheets width—one sheet representing the right deckel, one sheet the center and one sheet the left deckel of the machine—may be easily recognized and taken in sets of three from each skid.

There exist a few other methods of sampling wet pulp, either hydraulic pressed or just run over a wet machine and folded into laps or bundles.

Figure 10 shows a convenient form for the recording of tests. Its reverse side is ruled with several columns for the entry of individual scale weights of packages.

In order to have the samples baked absolutely bone dry, they should be carefully broken up and evenly distributed in the trays before being put into the oven, where they should remain twenty-four hours at a uniform temperature of 212 degrees. It is obvious that the weight of the samples must be determined with accuracy, since the slightest deviation may mean a great difference in the final test figures.

Usually, consumers of pulp make special arrangements with the shippers as to the methods of testing. It is, as a rule, customary to re-test a shipment when the first test shows a difference of over 2 per cent in the air-dry weight. If the result remains unchanged, the shipper is informed and the car left intact until the matter has been settled.

Process supplies, such as glue, alum, rosin size and so on, should be subjected to systematic tests as a matter of plain business routine. Raw materials and supplies must conform to specifications under which they were bought. Waste is a large item of costs and there is altogether too much of it evident in many plants. A great deal can be accomplished by concentrating attention to some of the details outlined in this chapter—the small margin of profit that is realized on the average grades of paper does not permit of leaks and preventable wastages.

TEST CARD

Car No.:.....Grade:.....Rec'd.:.....

No. Units Sampled:.....By:.....Date:.....

Put in Oven:.....Removed:.....Invoice Weight:.....

Scale Weight:.....

	Wet Weights				Car No.	Dry Weights				Tray No.
	Lbs.	Oz.	Oz.	Oz.		Lbs.	Oz.	Oz.	Oz.	
Gross Car No.....										
Car No.....										
Car No.....										
Net										
Gross Car No.....										
Car No.....										
Car No.....										
Net Total										

CALCULATIONS

	Units	Wet Weight	Bone Dry %	Air Dry %	Air Dry Wt.
Invoiced					
Our Tests					
Over or Short					

Paper Machines

To be capable of correlating costs and production of the paper machine units, the cost department must have not only suitable records of the daily output, idle time and working variations, but also accurate accounts of the consumption of wires, machine clothing and other supplies. Since each paper machine has a predetermined standard production rate, that is based on past performances, cost forms covering the machine room activities must cover:

1—The itemized actual production per hour and per machine.

2—Productive machine hours.

3—Idle time and causes.

4—Variations in production resulting from changing of deckel and to other weights and grades during a working day.

5—Whether the hourly production has been more or less than the established standard.

These features will be treated in a future issue and analyzed together with a few suitable cost forms for the recording of the respective details.

Editorial Comment

By WILLIAM SIBLEY

Interesting Developments in Other Fields

FOUR years ago there were no broadcasting stations. Today there are 530 in operation. During 1920 the sale of radio apparatus was less than one million dollars annually. Now, it exceeds one million dollars a day. The radio industry provides employment for over 200,000 persons and it is estimated that the radio audience is in excess of twenty millions. A method whereby ships can be directed entirely by radio has been perfected. Not long hence, airplanes will be carrying Montana wool and Georgia cotton to the New England textile mills—without a man on them. They will be guided by radio—dispatched by one station and caught by another.

In the field of photo-chemistry, scientists have discovered that through the use of the ultra-violet ray, hens can be made to lay more than their established quota. In one experiment, with a hen that laid 30 eggs in January, by the application of the ultra-violet ray she laid 144 eggs in February.

A director of the American Endocrine Laboratories says that through the development of the Gamma ray (which makes possible the ionization of our endocrine glands) the progress of old age can be definitely retarded. This means than the wrinkled skin, the listless gait, the palsied hand, the faulty memory, concomitant with 80 years of age, are to be prevented, or delayed, through the application of the Gamma ray.

As the Weather Bureau can now determine the general trend of weather two and three years in advance, through the development of scientific instruments, it is said that an instrument has been perfected that will predetermine the occurrence of earthquake shocks long enough to serve as a warning to the people living in the effected zones.

A newly perfected ultra-audible microphone now detects and amplifies insect voices. This opens up to us a whole world of sound for entertainment and practical purposes. In the mining industry they are using an instrument that will record voices or similar sounds through a quarter-mile of solid rock. It has already done much to aid those in search of miners trapped by cave-ins.

Plants exposed to electric light at night have grown to twice the size of those subjected to daylight alone. Another scientist has perfected a means whereby he can preserve, indefinitely, perishable food of almost any kind. He accomplishes this by placing the food or fruit under specially constructed glass, through which the sun's rays act as the preservative. For the length of the experiments thus far carried forward, the odor, color and flavor of the perishable foods have remained unimpaired by decay.

It has been found that if one cuts their potatoes in the usual way for planting, then dips the portions in a very weak solution of nitrate of soda for 30 minutes just before planting, the eyes will sprout as quickly as seasoned seeds. This makes possible two crops of patatoes in the southern states and affords an early crop in the northern zones, where now they must import their early supply. The nitrate of soda solution is very weak and inexpensive.

Bleaching powder is now made from spoiled potatoes, as well as charred bone, wood, or blood. This powder, when mixed with oil of turpentine, makes an excellent shoe polish. Probably shoe polish manufacturers will soon be large buyers of spoiled or dried potatoes.

Seed oysters are now being propagated in a hatchery much the same as trout. This, heretofore, was considered an impossibility. A high-grade potash is now being made from sunflower ash. The yield ranges from 15 to 200 pounds of potash to the acre of sunflowers.

Who Will Make Up the Deficit?

IN CALIFORNIA the state revenues obtained from corporation taxes amount to nearly ten per cent of the state's gross income.

Advocates of government ownership of public utilities tell us their plan would effect in a "saving to the people"; a "reduction in taxation."

Puttting the public utilities under government ownership would take the electric light, the power, the gas producers; the telephone, the telegraph and the railway operators out of the taxable lists.

Who, then, would make up the 10 per cent?

Decline in Agriculture

NO LONGER is the United States a predominantly agricultural country. The change to industry was made only since 1910.

In 1900, 45,000,000 people lived in towns and cities. By 1919 our urban population had grown to 60 millions and today nearly 80,000,000 reside in towns. By 1930, it is estimated that 90 millions of people will depend upon the farmers for food.

If the present trend continues, the farmers will not be able to supply the demand. We shall soon be-

—— on Timely Subjects

come a food importing nation. Not tropical foods only, but wheat and other grains.

The growth of American agriculture has declined steadily since 1900. From 1870 to 1900 we added more than 3,000,000 new farms to our national wealth. Of this number more than 1,100,000 were added in the decade of 1890 to 1900. Since then, however, the increase has been at a much lower rate, the addition for the years from 1900 to 1910 being less than 625,000. Today, farms are fewer and our farm population smaller than that of 1910. Over 100,000 farmers entered claims for bankruptcy during 1923, and today there is a very definite trend toward reduced acreage among all middle-western farmers.

Unless chemical, scientifical and mechanical developments of a far-reaching nature come to assist in the raising of foodstuffs, importation is our next step.

Says Herbert Hoover:

". . . . But I may say at once that if the American people have not the intelligence, if they have not the character, if they have not the political mechanism by which private competition can be maintained and yet abuse can be prevented, then they do not possess the character or the political mechanism by which they can undertake the gigantic operation of these enterprises." (Mr. Hoover was speaking before an audience of railroad men.)

"Liquor Salesmanship"

ONLY recently we picked up, on our commutation train, a single page torn from some book or magazine on which appeared the following editorial. We thought it very good and would extend credit to the author if we knew the source. We quote:

"It is astonishing, in these days of advanced salesmanship, that so many salesmen still depend on the influence of gifts of liquor, cigars and similar tactics to sell their wares. And it is more astonishing that they are encouraged in many cases by their sales-managers and employers.

"Good salesmanship is nothing more nor less than an earnest desire on the part of one man to serve another in an efficient advisory and consultant capacity. The good salesman doesn't advise his prospect to buy something for which he has no need, nor an article of inferior quality. The salesman exists for the primary purpose of helping the buyer.

"Failing in this, the salesman becomes an order taker, and to curry favor with the buyer subsidizes him with gifts, of which liquor seems one of the most acceptable today.

"It robs selling of all its pleasure to know so little about one's product, and to have so little interest in the prospect as to have to resort to liquor salesmanship. And then too, the mutual disgust between the two must be hard to endure."

The salesman who peddles booze (the word is of 1910 vintage but it still holds good) with his goods is not keeping faith with the Constituttion of the United States. And if he does not keep faith in one thing—why should the buyer place his trust in his word, or his product?

Financial Benefits as Well as Moral Reasons

WHEN we learn that the Beaver Valley Traction Company reduced their accident-compensation costs $24,000 in two years, simply through the use of safety equipment and the spreading of safety propaganda, we have incentive to ask the secretary for the total of our own costs.

When we know that by the same means, the Texas Power and Light Co. cut this item from $60,000 in 1920 to $2,000 in 1923, safety work takes on a new color. Therefore For Profit seats itself beside our Philanthropic Motive.

Of the 209 daily deaths by accident in the United States, 36 are due to falls and stumbles. The majority of these fatal stumbles are **industrial.** Every one of them causes suffering for the victim's relations and a financial loss for the employer.

How recently have you toured your plant with the single intent of inspecting safety appliances and looking for places where additional safety measures should be taken? Such tours have a dollars and cents value.

Short Cuts from Other Offices

IN THE general office of the Shotwell Company, Chicago, there hangs a large hand-painted poster entitled "Stop the Leaks." It tends to build esprit-de-corps worth much in dollars and cents. We quote:

"If you know where there is a 'leak' in this business—report it. If you know where a dollar can be made or saved, it is your plain duty to speak up. Let's work for the good of all."

* * *

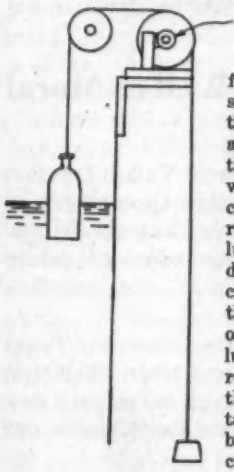
In this same office, a cash carrier system has been installed. It is used for the transportation of telegrams, shipping orders, mail, bills, etc., from one desk to another. Much confusion, "running around," employee's time, and office boy turn-over is thereby eliminated.

Practical Helps for the Mill Man

Repairing Sulphite Digester Linings

A CONVENIENT and reliable method of repairing leaks in sulphite digesters is carried out in the following manner. When a leak appears in the steel shell, a hole is drilled through at this point large enough to take a ⅜-inch pipe. Water is then pumped into the space between the shell and lining with an ordinary boiler testing pump, care being taken not to exceed 40 pounds pressure at the maximum as there is danger of loosening the lining. The water will then be forced through the leak in the lining on the inside. When the inside leak is located, grouting is pumped in from the outside and the inside lining pointed up with acid proof cement. The pump used is an ordinary hand operated pump for testing boilers. This is mounted on a baseboard, pumping from a pail connected to the intake.

Meter for Bleach Liquor



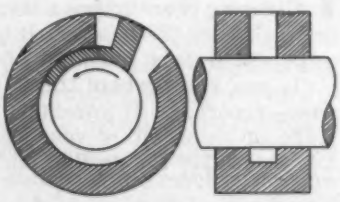
WHERE bleach liquor is used, the problem of finding a suitable meter for it is often confronted. The sketch shows a simple device which records the amount of liquor taken from a tank and which can be easily made. A bottle float is attached to one end of a cord with a weight on the other end. The cord runs over a pulley with a Veeder revolution counter attached. One revolution of the pulley corresponds to a distance on the tank the length of the circumference of the pulley. Knowing the diameter of the tank, the number of gallons corresponding to one revolution can be calculated. The counter records only as the tank is emptied. In this manner an accurate check is obtained on the amount of liquor handled by the tank, providing the discharge is closed while the tank is being filled.

A Jordan for the Machine Tender

A CONVENIENT arrangement is carried out in one mill by installing one Jordan in the beater room and another in the machine room. The first is operated by the beater engineer and Jordans the stock before entering the machine chest. The second is handled by the machine tender and is located between the machine chest and the machine. With this arrangement the machine tender can make any adjustments he likes that will take effect immediately on the machine.

Setscrewless Collar

IN THE sketch is shown a patent collar which is attached to the shaft without the use of a set screw and which at the same time may be quickly and easily removed. A slot extends through the collar to an annular groove which is eccentric to the shaft. The turning of the shaft wedges the key into the groove, holding the collar tight to the shaft. The collar is quickly loosened by driving on the heel of the key. There are no projecting parts to cause accidents by catching on clothing.

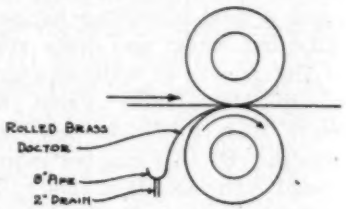


Baling Iron Straps

IN AT least one mill a power baler for broke has been paid for by baling and selling iron straps and wires from pulp bales.

Removing Water from Press Rolls

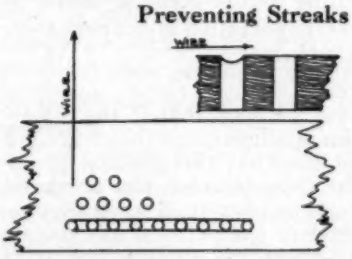
A DOCTOR to aid in removing water from the press rolls has been used to advantage by a number of mills, as shown in the sketch. In one instance, tests before and after installing it showed a difference of 1½ percent in the moisture content of the paper after each press. It is better adapted for use with fast running machines where the water has a greater tendency to be carried through the presses, but it may be used to very good advantage on slower running machines.



Preventing Stock from Flying Out of Fourth Pocket on Grinder

IN ONE instance, trouble occurring from stock flying out of the 4th pocket on a pulp grinder while being filled was remedied by lengthening this section of the casing, moving the pocket and piston out 6 inches farther from the stone. This space then stays filled with wood when the door is opened preventing any stock from flying out.

Preventing Streaks in Paper



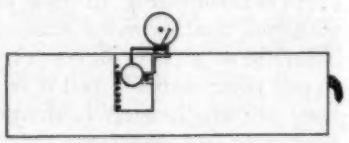
A LITTLE trick which has helped in preventing streaks in paper consists in making a groove joining the first row of holes in the suction box which are encountered by the wire. This distributes the suction evenly across the sheet, and has proven to be effectual in decreasing the tendency to form streaks.

Cleaning Flat Screens

IN A number of sulphite mills where flat screens are used, these are kept clean by using a hose carrying about 80 pounds pressure and throwing a fine stream of water. The substitution of this for a steam hose saves a considerable amount of steam and does not blow as much fine dirt through the screen plates.

Recording Weir

A RECORDING weir for measuring white water losses can be made by attaching the clock and pen of a Hays CO_2 recorder to a float on the weir box as shown. The float is contained in a small box outside of the weir so that the current is not hindered. Holes in the side of the weir box keep the water around the float at the same level as that inside. This keeps an accurate record of the amount of white water going to the sewer.



Beating Rags from Rag Catchers

A BOXBOARD mill has reduced shrinkage from 5 to 6 percent by taking the rags from the rag catcher on a Shartle beater and beating them over again. Further saving was accomplished in the handling of the rags. Where formerly they had to be hauled away from the mill, they are now taken to the other beater.

A portable elevator tiering machine in the place of scaffolding for setting heavy motors in place on high stations has proven useful.

Horsepower Recorders for Beaters and Jordans

TO ASSIST the operators in handling beaters and Jordans, some mills have found it profitable to install wattmeters calibrated to read directly in horsepower. Showing power consumption in terms a little more easily understood, this has led the men to watch the instruments a little more closely than they might otherwise.

Paper Sticking to First Press Remedied

TROUBLE occurring from a light weight bleached sulphite sheet sticking to the first press was remedied in one instance by the addition of 5 or 10 pounds of silicate of soda per hundred pounds of stock in the beaters.

Preventing Light Bulbs from Being Stolen

THE bill for electric light bulbs has been reduced by 80 percent in one mill by changing the voltage of the lighting circuit from 110 volts to 220 volts, making the bulbs useless on outside circuits.

The Disk Colormeter for Matching Colors

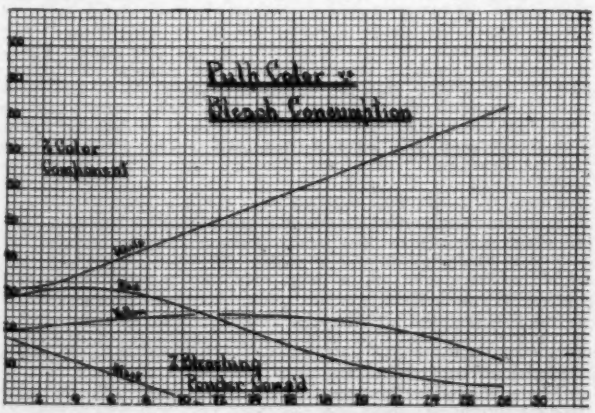
By ALLEN ABRAMS

THE Disk Colormeter is an adaptation of the Maxwell disks, furnishing a simple and reasonably accurate method for matching and recording the color values of paper, pulp, textiles, etc.

Both the principle of color matching by rotating disks and the application of this principle are old; yet the method is so simple and is applicable to so many materials that it should find more general use in the pulp and paper trade.

Without going into the theory of color production, it may be stated that a color may be obtained by properly blending the so-called primary colors. There are two schools, one holding to red, yellow and blue as the simple or primary colors, while the other considers red, green and violet as the primary colors. In any case all intermediate colors may be produced by the correct blending of two or more of these fundamental colors, brightening with white or subduing with black as required.

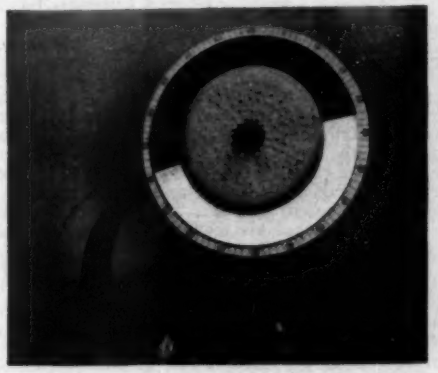
The Disk Colormeter employs red, yellow and blue as the fundamental colors. It consists essentially of a small motor



for rapidly rotating the colored disks, circular disks (5½" diameter) of the primary colors and of black and white, and a larger disk (6" in diameter) divided into percentages.

The materials to be tested on the instrument may be of widely varying composition. Thus, the following substances may be readily examined—white or colored paper or pulp, textiles, raw cotton, etc. The material to be tested may be cut or formed into circular shape (3" in diameter) and is then punched with a hole in the center so that it will fit onto the motor shaft. The disks are then assembled as follows: the "percentage disk" is slipped onto the shaft, then the standard color disks, the disk to be tested and finally the wing nut for holding the disks firmly in place.

On account of the variations in the quality of daylight, samples should be matched by a good north light or preferably in a dark room by the light of a "daylight lamp." After a little experience, the operator can form a good estimate of the percentage of each color which will be required to match a given sample. The segments of color are adjusted over one another, the disks are fastened tightly and the motor is then



The Disk Colormeter

run at a rapid speed. This eliminates any surface variations in the material being tested and, at the same time, blends the primary colors of the disks into a single color.

In case the outer band of color does not match the sample, the motor is stopped and the colored disks are readjusted. When the sample has finally been matched by this method the percentage of each color component is read off and recorded as, e.g.: red, 20 per cent; yellow, 10 per cent; blue, 5 per cent; black, 30 per cent; white, 35 per cent; red, 20 per cent; yellow, 10 per cent.

After a little experience with any particular type of material the operator is able to match samples quickly and with an accuracy of about 2 per cent.

If desired, a special color may be introduced in place of any one of the colored disks and thus be used for comparison. The disks should be kept carefully covered and protected from light and dust when not in use, as otherwise the colors will gradually change.

The operator should preferably familiarize himself with the method of producing various colors by preliminary experimtation. Thus, he can show that with the proper proportions of the correct primary colors: red and yellow produce orange; red and white produce pink; blue and red produce violet; violet and green produce olive; blue, red and yellow produce gray; black, red and yellow produce brown.

The Disk Colormeter has proved valuable in testing and recording the color of pulp and paper samples. It is often desirable to compare two samples made at different times but this cannot always be done directly because the samples are often susceptible to change in color. If, however, the component colors are tested and recorded, comparison can be made at any time.

In trial machine runs on new dyeings, the sample to be matched may be made into a 3-inch disk while the trial match is made into a 6-inch disk. By putting these disks on the Colormeter and rotating, it is possible to find what colors must be added to the trial match in order to produce the color of the original sample.

In research work on cooking, bleaching, etc., this instrument may be used for following the color changes produced during the experimentation. An example of this is shown in the accompanying diagram which illustrates the change in color components of a pulp during the course of bleaching.

Other applications of the Disk Colormeter will suggest themselves to persons engaged in pulp and paper testing. In conclusion it should be borne in mind that this instrument is not applicable to all fields of color testing, particularly in the delicate shades where greater degree of accuracy is required. However, it is admirably adapted to certain fields where it can be used to great advantage.

Quality not quantity counts. A centipede has a thousand legs but nobody ever saw one in the chorus.

Motors and Control in Paper Mills

By W. W. SPRATT*
General Engineer, Westinghouse Electric & Manufacturing Company

IN THE selection of methods of power application, it is essential to recognize and compare all the factors which enter into the cost of production and to select that method which stands the analysis most favorably. Therefore, in considering electric drive in either a new plant or to replace mechanical group drive in an old plant, the superintendent must be satisfied that the method he selects will give him uninterruptedly sufficient power and convenience of control of power. This constitutes an adequate drive. He must further be satisfied that his method has a definite service in cost of production either because of reliability and decreased outages or because of lower installation expense, and greater flexibility, permitting increased production. This will result in reduction in operating expense. The electric drive is generally selected when its lower maintenance expense is considered. When the convenience of electric drive is evaluated in terms of increased production, this factor often produces a powerful motive for its selection.

But there are many other items which will often favor electric drive. Among them are the following:

1. Location of power plant and location of buildings is not so greatly influenced by transmissions as with mechanical drive. This gives greater flexibility in arrangement of buildings.
2. Similar flexibility permitted in arranging different machines in the buildings, permitting the consideration of production, lower labor cost, etc. to predominate in machine grouping.
3. In a new mill, lighter building construction can be used due to elimination of heavy shafting and belting strains, inseparable from mechanical drive.
4. Easy manner of tying together main power units to permit interchange of power as load distribution changes.
5. Other advantages which will be mentioned later under the discussions of some of the detail applications.

Many, in fact, most, paper mills produce their own power. The lower first cost of alternating current generators, A. C. motors and control and the greater economies obtained in

Fig. 1—Squirrel cage motors driving Jordans

transmission and distribution of alternating current as against direct current, has determined that alternating current prevails.

Most of the motors of a paper mill are of the constant speed type. Except where heavy starting torque conditions are experienced, a squirrel cage motor meets the requirements of the constant speed drive.

The squirrel cage motor is of the low slip type. The drop in speed of an induction motor from no load to full load is called the "Slip" and is proportional to the amount of resistance in the rotor winding. This is the motor which paper mills ordinarily use. It will have a 3 to 4 percent lower speed at full load than synchronous or no-load speed. But there is a high "Slip" squirrel cage motor. It is often built to give a 12-20 percent lower speed at full load than synchronous speed or no load speed.

This motor is used on elevators and hoist work where the

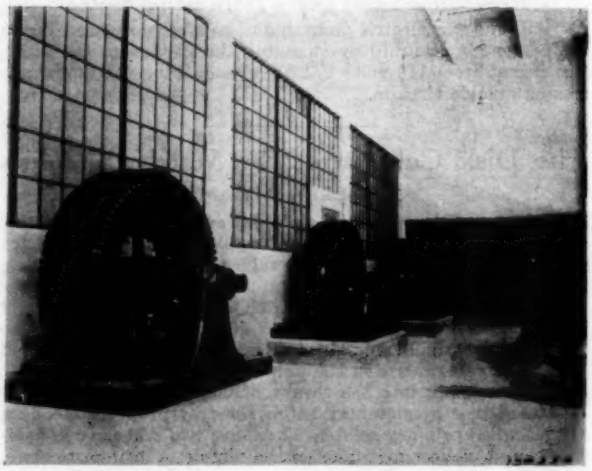


Fig. 2—Line of 3 synchronous motors, each driving two 3-pocket grinders

motor may have to start and stop a large number of times. With this motor the design is more greatly influenced by the better starting torque condition of the high slip motor. The running speed and efficiency is of minor importance. This type of motor is not often used in a paper mill except occasionally on chipper drives. Unless a belt drive is used on a chipper the shock is rather severe on the motor. The high resistance rotor because of its variable speed characteristic withstands the shock with less strain. The fact, however, that the variable speed characteristic of the high resistance squirrel cage motor is fixed when the rotor is once built limits its speed characteristic to a definite form. For this reason this motor is not used where several speeds are required, but is displaced for this service by the wound rotor motor.

Figure 1 shows five squirrel cage motors driving Jordans. The Jordan application is always special due to the necessity of plug withdrawal provision. This particular application shows a telescopic coupling which permits a fixed position of both Jordan and motor base. Another method of making the direct application is used by one Jordan manufacturer in which a rigid, non-telescopic coupling is used to connect the motor and Jordan shafts. This second method provides rollers under the motor base and the motor and Jordan plug are moved back and forth as a unit.

The principal exceptions where other than squirrel cage motors should be considered are for:

1. **Pulp Grinder Drives.** Here wound rotor motors may be used, but synchronous motors are usually supplied due to the more favorable power-factor and efficiency and often lower cost of these motors. The opportunity to improve total plant power-factor by means of synchronous motors on grinders is usually accepted and is justified.

Figure II. illustrates part of a line of eight 1000 H. P. 240 R. P. M., 2200 volt, 3 phase, 60 cycle synchronous motors each driving two 3-pocket grinders. To avoid line disturbances these particular motors are started by means of a DC-AC Starting Set to which the incoming synchronous motor is connected and by adjustment of the speed of which the incoming synchronous machine is synchronized with the line.

2. **Jordan Drives.** The direct connected motor is generally accepted as being the best motor for the Jordan. The absence of side belt pull makes easier the maintenance of concentricity of the plug in the Jordan shell. Where power factor is an

item of consideration, the Jordan drive affords a very good application for the 100 percent power factor synchronous motor. Where the power factor of the mill has been neglected for a period of years, 80 percent power factor motors or oversize synchronous motors with fields rated to permit the motor to operate practically as a synchronous condenser are often justified in Jordan drive. This is especially true where a rearrangement of the motors of the mill (with less margin of rating over maximum loads encountered) would be too expensive or impossible. In general, the slow speed induction motor is a flagrant contributor of wattless component and a synchronous motor will usually be preferable. We have witnessed isolated cases where high starting torque was

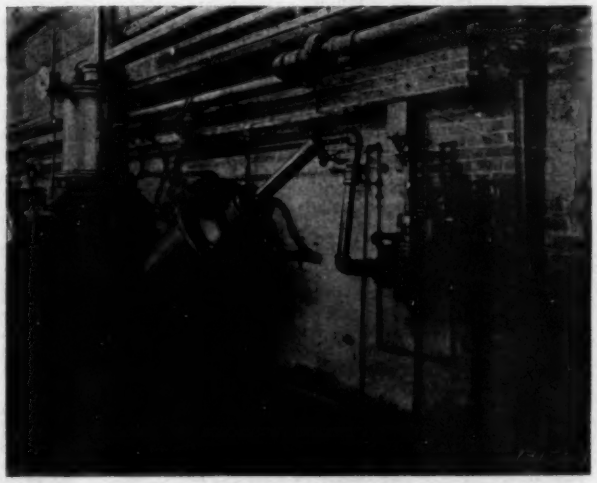


Fig. 3—Application of pulp grinder head regulator to motor driving 3-pocket pulp grinder

required, and the wound rotor motor was justified on the Jordan.

3. Beaters usually require wound rotor motors. The convenience of being able to start the beater when partially filled with stock usually favors the motor with the better starting torque characteristic.

4. The group drives which have high starting torques usually require wound rotor motors. The easier effect on the electric power system of the wound rotor motor favors it for many applications. The wound rotor motor will give from 1 to 2.5 F. L. T. at starting for a much smaller current demand than the squirrel cage motor. The starting torque of the squirrel cage motor at normal or full voltage applied will range from 1 F. L. T. to 1.5 F. L. T. on 14 to 4 pole motors respectively but the current demand may be from 2 to 5 times full load current depending on size and speed of motor. The wound rotor motor will usually give from 1.5 to 2 times the starting torque of a squirrel cage motor of the same horse power rating, which is equivalent to from 2 to 3 times the torque per ampere. It is hence apparent that where the motor involved is large and constitutes an appreciable percentage of the total load i. e., from 10 to 15 percent, the effect on the power system when starting a heavy load is less with a wound rotor motor than with a squirrel cage motor. The constant speed end of the paper machine is, except in a few very modern mills, driven as a group drive by a wound rotor motor. (In some mills the various pumps, screens, etc., of the constant speed end of paper machines are driven by individual drive.) Again, when the variable speed end of the paper machine always operates at one definite speed corresponding to the synchronous speed of the driving motor, the wound rotor motor may meet the requirements. In general, however, the necessity of some speed adjustment of the variable speed paper machine makes the direct current motor drive necessary.

5. Certain bucket elevators, conveyors, etc., subject to being occasionally buried and thence difficult to start, use wound rotor motors.

The selection between squirrel cage and wound rotor motors is determined by whether or not a single constant speed will meet the requirements and whether starting torque requirements are light or heavy. The simplicity of the squirrel cage is a temptation to install a somewhat larger squirrel cage motor instead of a wound rotor motor. It usually is better economics, however, to use the wound rotor motor where the starting torque is high.

Field of Wound Rotor Motor

In addition to its use where an especially good starting torque characteristic is required this motor has a definite field of application where several more or less indefinite intermediate speeds between half synchronous and synchronous speed can be used to advantage. The usual secondary resistance speed controller will permit from seven to 11 speed points dependent on the type of control drum selected. As the speed obtained in this manner is governed by the torque requirements of the drive, the speeds are not always the same for the same point of the controller on a variable torque drive. Therefore, if close speed regulation or adherence to adjustment to a definite speed value is required over a variable torque range, a direct current motor will best meet the requirements.

The speed of a shunt wound direct current motor can be held closely to a definite value for varying torques within its rating. While the low speed point of the wound rotor motor speed range is usually limited to half synchronous speed, this motor has been applied to winders with the resistance of the starting drum to give lower speeds. The lower speed points are however of intermittent rating and the speeds obtained are so indefinite as to limit the application of these low speed points as intermediate starting points in smooth acceleration toward the first running points. On the better mechanical drives where the required starting torques of the drives duplicate well over the operating life of the equipment, the wound rotor motor application for a speed range from synchronous to not less than half synchronous speed is usually satisfactory.

The limitation of the adjustable speed application of the wound rotor motor is the reason for the direct current motor application to the variable speed end of the paper machine. The direct current motor application to winders and cutters is also often justified in this manner.

Control

1. Small Motors—½ to 10 H. P., and in rare instances possibly as high as 25 H. P. motors, can be started by quick make and break, across the line, i. e., full line voltage—oil immersed nonreversing starters. These starters are compact and economical and are represented by the 815 and 816 Westinghouse starters. The 815 starter uses oil only for 550 volt service while the 816 starter uses oil on all voltages from 220 to the maximum of 550 volts, i. e. contacts under oil. These starters can be supplied with low voltage protection only—i. e. (on low voltage which would be damaging to driving motor the starter disconnects motor from the line and must be manually reclosed and will not stay closed except as held or tied closed until suitable voltage is reestablished) or starter can be supplied with combination low voltage protection and inverse time element overload protection, i. e., time of a trip a function of the current tending to trip out.

Fig. 4—Full automatic single motor control panel with meters used with a 250 R paper machine motor

2. Where reversing duty is required in small motors from ½ to 15 H. P. a DRUM TYPE of "across the line" starter is used. This starter has oil immersed contacts supplied for maximum of 550 volt. It is a manually operated starter with three positions of the operative handle, i. e., forward, off and reverse, with or without spring return to off position when operator releases his grip from either forward or reverse position.

3. The type of starter that is probably the most familiar is the auto starter or compensator of the auto transformer type. This starter is non-reversing and has three positions of the operating handle, i. e., starting position when the auto transformer is inserted between the motor and the line to provide reduced voltage to the motor and hence decreased

current demand from the line; a running position when motor is connected to the line directly without auto transformer; and an off position. This unit is a safe, self contained unit suitable for voltages from 220 to 550 volts and often used on 2200 volts. The Westinghouse Type A starter is available in sizes from 5 to 100 H. P. in all frequencies and for a maximum of 200 H. P. for 440 to 2200 volt operation at 50 or 60 cycles. This starter has overload protection which may be adjusted to meet exact operating conditions. Low voltage protection prevents accidents from unexpected starting. A safety interlock is provided to stop the motor when the cover of the starter is open. The switching mechanism of this starter is built entirely of steel, copper and micarta.

Two auto-transformers, connected in open delta, are used in three phase starters. Two starting taps giving 65 and

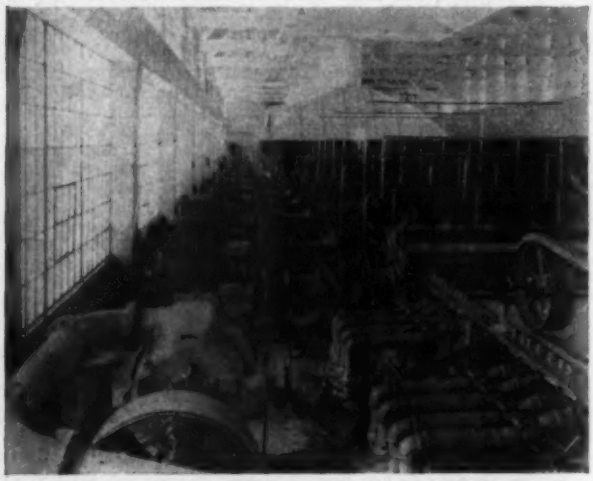


Fig. 5—Nine section individual paper machine drive, 164" Bagley and Sewall Newsprint machine, at Washington Pulp and Paper Co., Port Angeles, Wash.

80 percent of line voltage are provided on transformers used with the smaller starters. Three taps, 50, 65 and 80 percent of line voltage are provided with larger starters. The 80 percent tap is usually conected when the starter is shipped. On 12 pole and 4 pole motors the different taps will give the following torques:

TAPS		PER CENT F. L. T. AT START		
50 percent	Voltage	29 percent	12 pole motor	Using Power Club torque ratings
65 percent	"	55 percent		
80 percent	"	74 percent		
50 percent	"	38 percent	4 pole motor	
65 percent	"	63 percent		
80 percent	"	96 percent		

Hence the tap used should be determined by the starting torque requirements of the drive allowing approximately 20 percent margin over maximum starting torque required to be used in acceleration of the drive. For paper mill service where individual drive will predominate or small group drive may be used, it is recommended that starters be used with an ammeter mounted in a bracket as part of starter frame (so arranged that removing the cover does not disturb the meter). This meter permits keeping a close check of the exact power requirements of the drive being handled by the motor controlled.

For larger squirrel cage motors ranging from 50 to 300 H. P. and possibly to 600 H. P. on 440 to 2200 volt operation, auto transformer type starting panels are used. These panels are provided with the usual high rupturing capacity, oil immersed double throw (Type Q. F.) or two single throw (one for starting—second for running) circuit breakers of the switchboard and the power house type. Three voltage taps are provided on the auto transformers—50, 65 and 80 percent of normal line voltage. Auto transformers for these panels may be mounted on wall back of panel. Low voltage protection and inverse time element overload protection is usually supplied.

4. **Automatic Starters**—Squirrel Cage Motors. There are various across the line types of starters for small squirrel cage motors, using contactors to make and break the circuit and either thermal overload or series coil overload provision, but the starter of most interest to paper manufacturers is the Auto transformer type of starter. The Westinghouse starter of this type is known as the AF starter. These are provided in sizes from 5 to 50 H. P. for all common frequencies and from 5 to 100 H. P. for 440 to 550 volt, 50 and 60 cycle operation.

This starter is essentially a standard type A auto starter providing remote automatic control for squirrel cage induction motors. Time limit acceleration as privided by this starter, protects the auto transformers from burnout and assures that motor will always accelerate under all conditions of load. This time element relay is of the oil dashpot plunger type and can be adjusted to give a time of acceleration up to a maximum of 15 seconds.

Instead of the operating handle of the auto starter there is provided a double magnet. This magnet, when the control button is depressed, pulls the switching mechanism first to the starting position and thence after a time interval to the running position. Low voltage release is automatically obtained with this type of starter. Low voltage protection is provided by using a three wire master switch. Inverse time element overload protection is provided. This time element is provided by means of a plunger working in an oil dashpot. A reset button is standard equipment so that this button has to be depressed to release a latch type of "lock-to-open-position-of-starter" after an overload. This additional step assures that operator must think and he is hence afforded a reminder to determine what caused the overload.

5. Panel automatic auto transformer starters are also available of the arc-chute magnetic blowout contactor type for motors from 125 to 500 H. P. for voltages not to exceed 550 volts. When 2200 volt power is encountered the oil immersed contactors are used. These 2200 volt automatic auto transformer type starters with current limitation acceleration provision are thence free from high voltage on the face of the panel. These starters are operated by standard forms of push button stations providing either low voltage release or low voltage protection or may be controlled by automatic master switches.

6. **Wound Rotor Motor Control.** In general the necessary control for a wound rotor induction motor will consist of a primary switch with either manual or automatic means to connect the primary to the line, and a secondary switch to permit adjusting the resistance of the secondary for either starting or continuously running duty.

The special features of such combinations usually involve interlocking electrically or mechanically, to assure that the primary of the motor will not be connected to the line except with full secondary resistance in the secondary control.

(A)—Small wound rotor motors for ½ to 50 H. P., not to exceed 600 volts may be started and regulated in speed by 3 arm secondary resistor type of rheostats. These rheostats are provided as standard with safety type enclosing covers which permit operation of the handle from outside. Ten steps of resistors are standard. Resistance is inserted in all three phases of motor secondary and is self contained and enclosed by the mounting box. The usual protection is standard. The primary switches may be small circuit breakers of a type determined by the voltage of the system; although interlocking is simplified with a magnetic primary panel. When a magnet primary panel is used the motor primary is connected to the line by the first movement of the operating handle of the combination master and secondary rheostat toward the "run" position. If the pri-

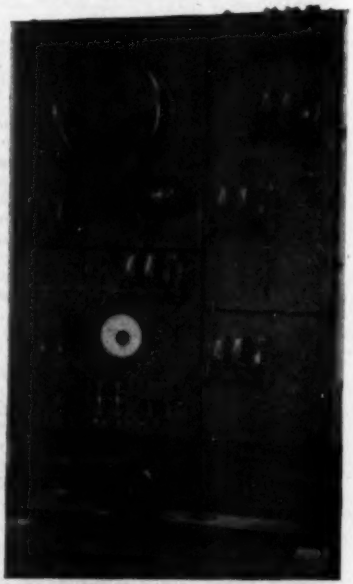


Fig. 6—Full automatic push button operated super calender drive to control both "threading-in" and productive speed, a. c. motors, and to provide plugging proviser for quick stops

mary panel contractor is open for any reason, it cannot be closed again until the secondary rheostat handle has been returned to the initial or "resistance-all-in" position.

(B) Larger wound rotor motors are controlled by drum type secondary control and oil circuit breakers provide the primary control. Panel mounting of circuit breakers is standard and panels provide a place for mounting meters which are so necessary to permit constant checking of the load taken by the motor controlled.

Synchronous Motor Control

There are three methods which can be used to start self-starting synchronous motors. Two of them are manual and the third is by automatic means.

The less expensive synchronous motor equipment when desired for the smaller motors will be similar to control equipment outlined for the type A auto starter as described under control for squirrel cage induction motors. When motors have a direct connected or belted exciter no field switch is required, the exciter and synchronous motor field being permanently connected, and the field builds up gradually as the motor accelerates. The motor is started by means of the auto starter alone and pulls in of its own accord. A special automatic field switch is, however, used to either reduce the disturbance to the line when starting a motor under heavy load, or with a separately excited synchronous motor, to apply the D. C. field after full voltage has been applied to the synchronous motors.

The larger self-starting synchronous motors are provided with a slate starting panel on which is mounted:

1 Alternating current ammeter for line current.
1 Direct current ammeter for field.
1 Field switch with field discharge resistance.
1 Operating mechanism and rheostat for exciter field.
1 Pilot lamp.

Usually a power factor meter will be desired to permit setting the excitor field rheostat to give the desired power factor of synchronous motor load. The handles of the oil circuit breakers are interlocked: closing one breaker connects the motor to the reduced voltage taps of the auto transformer, and after the motor has accelerated to speed, this switch is opened and the other closed, connecting the motor directly to the line. A "trip-free" handle makes it impossible to hold "run-breaker" in against overload.

There has recently been developed an automatic type synchronous motor panel to permit PB starting of synchronous

Fig. 7—Westinghouse single motor dual frequency super calender, showing control for one unit, and frequency changer for the eight units, of the Kalamazoo Paper Co. installation

motor and to permit the use of less skilled electrical help in the actual starting of the synchronous motors.

The "brains" of the automatic starter used with synchronous motors consists of a lock-out-field contactor and a dashpot time limited transfer contactor. The lockout field contactor will have two opposed influences to determine which set of contacts are closed and thence whether the synchronous motor field is closed on itself during starting period or whether excited by direct current as when motor is running. One direct current coil of this contactor tends to close the contactor in a position to apply direct current to the synchronous motor field. During the starting period when the motor is connected to the reduced voltage taps of the usual auto-transformers, this direct current coil is opposed by an alternating current coil in the synchronous motor field circuit.

During the early starting period the current induced in this A. C. coil is sufficient to overpower the first coil. At about synchronous speed, however, the first coil assumes control and the contactor closes to apply field to the motor. After an interval of from two to three seconds as determined by the setting of the dashpot of the transfer contactor, the motor is transferred from the reduced voltage to line voltage.

Direct Drive

In the decision between group drive and individual drive there are many items to consider. The first cost of group

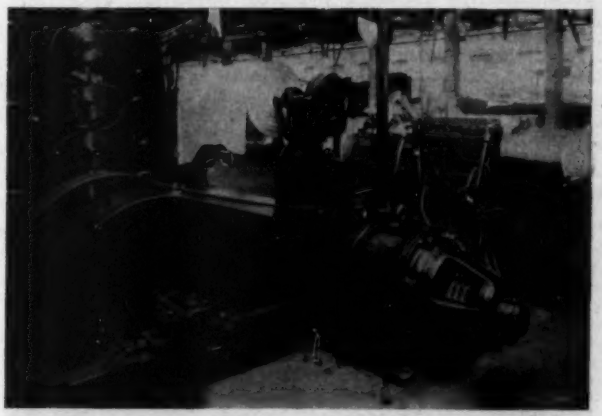


Fig. 8—Rear view of driving unit of Westinghouse, single motor, dual frequency, calender drive, supplementing Fig. 1

drive is usually somewhat less than individual drive. Because, however, the operator can watch the loads of individual machines with individual drive and thence control the division of power in processing as his judgment dictates best, the individual drive is becoming increasingly more popular.

While direct or individual drive is best applicable to many machines, there probably will always be places where the group drive will be more economical. Each case should be studied carefully.

More attention is being given in all lines of manufacture to the direct connection of motors to machines by couplings: to the use of gears, chain drives and the more compact belt drives, such as Lenix and Pullmax drives. The recently built paper mills and many of the rebuilt paper mills show examples of the most modern and well accepted methods of drives. In this connection I wish to point out that some of the greatest strides in the application of power have been associated with new methods of control and regulation.

One of these developments is the pulp grinder regulator as applied to large motors driving pulp grinders either to maintain a constant kilowatt load demand of the motor or used in connection with total plant load—where this load is not many percent greater than the grinder contribution—to maintain constant total plant load by the grinder load within reasonable amounts. The regulator includes a watt element which measures the load on the grinder motor and by means of rheostatic settings balances the load on the grinder against the desired load in a manner to maintain this load. The load is maintained by controlling the hydraulic pressure in the pressure supply line to the grinder pressure cylinders. This is done by a reversing motor which, through gearing, changes the position of the fulcrum of a moving lever system. The hydraulic valve is balanced on one arm of this moving lever system. The other arm of the moving lever system supports a piston moving in a reaction cylinder. The reaction cylinder is hydraulically connected to the pressure side of the grinder pressure cylinders and prevents overshooting pressure changes in the hydraulic system. The watt element is set to balance at a definite power value. If the load on the grinder is greater than this desired value the watt element in its unbalanced position energizes primary contactors to apply power to drive the reversing motor in the proper rotation to reduce pressure on grinder pockets. When the load is less than this desired value the watt element in unbalanced position energizes other primary contactors to apply power to drive the reversing motor in opposite rotation, which increases the pressure on the grinder pockets. In general, the system comprises the hydraulic element shown mounted on the wall in Figure 3, and an electrical element

in the form of the watt element, contactors, rheostats, etc., mounted on a panel, together with the necessary current and potential transformers required to actuate the watt element and to drive the reversing motor of the hydraulic element. There are about two dozen of these regulators in operation today. A few of them as stated are used to assure that the total plant load demand is maintained uniform throughout the week.

Paper Machine Drives

Electrically driven paper machines are of either the single motor or sectional individual motor drive dependent upon whether one motor drives the line shaft of the paper machine or whether the line shaft and usual mechanical devices are displaced by applying separate motors to each of the several intake shafts of the machine.

The single motor drive is of the adjustable speed type obtaining power from either a motor generator set or a geared type, turbine driven D. C. generator as considera-

Fig. 9—Direct connected, reversive motor, paper plater drive

tions of heat balance determine. The generator in either case is usually assigned as a power source solely to the paper machine motor. Speed range on the motor may be either by adjustment of generator voltage or a combination of adjustment of generator voltage with shunt field motor speed control.

Figure IV illustrates a full automatic control panel which is being used to control a 250 H.P. paper machine motor operating over a four to one speed range. Equipments of this type have been built to cover paper speed ranges as high as eleven to one.

The central motor operated face plate (Figure IV) is the rheostat controlling the speed of the paper machine. The line contactor above and at the right of this face plate is a contactor used to connect and disconnect the motor from its power source by push button control. The two pole knife switch provides a means of power disconnection between the motor and its power supplying generator. The relay just above this switch of the inverse time element overload type provides protection from overloads before they are sustained over sufficient periods to injure the equipment. Relays at top of the board are incidental, in the starting and acceleration of the motor, to the speed as predetermined by the rheostat position. You will note that this panel shows several meters, among which are watt hour meters in the generator and exciter circuits. Push button control with a full automatic equipment provides start, stop, fast and slow buttons at as many stations as a convenient drive can use.

With the sectional individual motor paper machine drive, the same or a smaller motor generator set or geared type turbine driven generator provides the direct current for the driving motors. Here each intake shaft is driven by its separate driving unit. The driving unit may be either a slow speed motor or a moderate speed motor flexibly coupled to a high grade reduction gear mounted on a common bedplate with it as a complete unit.

Each driving unit is maintained in speed synchronism with a master or reference of speed by means of a small regulator which, in conjunction with the master, controls the percentage of time that a resistor in the shunt field of the driving motor is in the field circuit. This effectiveness is a function of the phase displacement between the section regulating element and the master regulating element. The phase displacement ranges from zero to 180 degrees. For instance: When the regulating resistance is short circuited all of the time, it has no effect on the motor speed; similarly, when it is in the field circuit all of the time it has its full effect on the motor speed; when it is in the circuit half of the time it has the same effect as a resistance of half its value would have if it were in the circuit all of the time, etc. This regulator causes the section motors to maintain their required speeds with the same adherence to relative speed of the master as synchronous motors maintain their speeds in proportional harmony with the speed of the power supplying generators. In the case of the sectional drive, however, a voltage regulator is used to maintain the voltage of the power supplying generator to assure that the master speed is a steady basis of reference.

Figure V illustrates such a sectional drive applied to a 164-inch Newsprint Fourdrinier machine operating at approximately one thousand feet per minute. There are many advantages to such a sectional drive.

Although the first cost is greater than is the first cost of a mechanical drive, and although mechanical drives are operating more or less successfully, the following advantages of the sectional drive should be seriously considered and evaluated:

1. Incipient troubles are easily detected. Each section is an entirely separate unit and troubles can be detected by meters before they have reached such dimensions as to interfere with continuous production.

2. Somewhat less power is always taken by the simpler sectional drive with the fewer bearings and lesser mechanical equipment.

3. The absence of mechanical clutches, loose pulleys, open gears, belts, etc., gives the sectional drive a much lower annual maintenance cost.

4. The direct drive provides an easier means of starting the heavy sections and of operating these sections at the low speeds often used when spotting wires, washing and spotting felts, putting on carrier ropes, etc. Inching is permitted to assist in spearing paper from the dryers, etc.

5. Reversal provision of the calender is easily provided by simple push button control and permits convenient removal of plugs and normally obviates the necessity of jacking up the calender rolls under this condition.

6. The rear of the machine is made practically as accessible as the front of the machine.

7. There is a saving of floor space in the machine room.

8. The basement is not required with this type of drive and can be either eliminated or used for other purposes.

Two interesting calender installations have been made during the last year. They are the full automatic calender drive and the Westinghouse single motor dual frequency calender drive.

As you know, the two largest super calender manufacturers produce either a single motor drive where a set of back gears is introduced to give "threading-in" speeds or a two-motor drive where a smaller motor and additional gear reduction is used for the "threading-in" speeds. In either case the large motor is used for productive speeds and is usually a wound rotor induction motor. Starting and speed control provision is obtained with this larger motor by means of the usual wound rotor control drum which functions as a combination master switch and a secondary resistance control.

When it is desired, as is usual, to put the complete control of the drive under push button operation the same motors are used but the control takes a form as illustrated in Figure VI.

With this type of control push button stations to provide "Increase," "Decrease," "Inch," "Slow," and "Stop-Brake" buttons control the equipment as the names imply. If either of the two "Safe" buttons are depressed it will be necessary to depress all of the "Run" buttons before the calender can be started. After using the "Safe" button which functions as a stop button when calender is running, it is necessary to use the stop or run button to return the master switch to the start position before equipment can again be started. Depressing the "Stop-brake" button to the full travel position plugs the driving motor by reversing power connections to motor while secondary is connected to the fixed plugging resistance selected for the desired plugging torque.

To start the equipment the slow button is depressed once and the small motor is put on the line. The small motor runs only while the "Inch" button is being depressed, but it is not necessary to keep the finger on the "Slow" button to keep the small motor in operation. To start the large motor,

the "Increase" button is depressed and after the master has moved forward one button the large motor starts and the small motor stops. If the "Increase" button is further depressed, the large motor takes on more speed as increasing amounts of secondary resistance are short circuited. There are thirteen points of speed control. The equipment is completely interlocked and the usual protective means, such as low voltage protection and inverse time element overload protection, are provided.

With the Westinghouse single motor dual frequency super calender drive one motor is used and the "threading-in" speed of motor is obtained when the motor is connected to a low frequency bus. This frequency is usually of about one-tenth the value of the power frequency used at production speeds. This frequency can be made, however, of a value lower or higher than one-tenth of productive frequency within limits as requirements of calender room dictate.

Figure VII illustrates at the left the "master and secondary" drum and control panel of this drive. The frequency

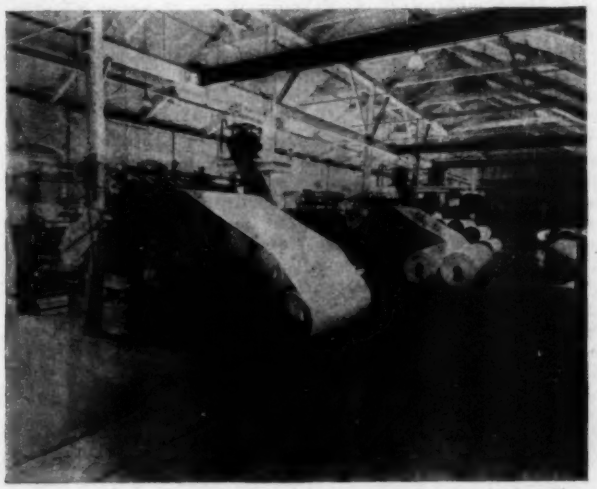


Fig. 10—Group of five, direct current, adjustable paper cutter drives

changer set of the commutator type is shown driven by a small D. C. motor at the right center of the illustration. The starting provision for the frequency changer and primary control of frequency changer is shown mounted on the wall at the rear of the frequency changer. The frequency changer has the outward appearance of a rotary converter. The productive frequency, which in the case of illustration of Figure VII, was sixty cycles, is fed into the machine through slip rings. The lower frequency used for "threading-in" speed of equipment is taken off of brushes at the commutator end of the machine.

In this system the calender drive does not use back gears. The motor is either geared directly or connected by chain drive to the lower roll of the calender.

With the calender at a standstill, and the drum in the "off" position, the calender drive is started by moving the drum to the first position. In the first position of the drum the motor is automatically connected to the low frequency bus and drives the calender at "threading-in" speed. Moving the drum to the second position automatically disconnects motor from low frequency and applies the higher or productive frequency to primary of motor and connects full secondary resistance to motor to give this machine necessary starting torque for smooth acceleration to the productive speed. Moving the drum handle progressively to cut out secondary resistance brings calender toward synchronous speed. The calender may be stopped either by a "Stop" push button which disconnects primary from line or by moving the drum back to the "Off" position.

Figures VII and VIII show front and rear views of a typical unit.

This system is credited with the following advantages:

(a) Greatly increased production, amounting in one case to 25 percent, due to increased flexibility and reduced physical exertion on operators, together with increased speed of calenders.
(b) Reduced personal hazard and fire risk.
(c) Elimination of noise.
(d) Increased cleanliness.
(e) Decreased lighting cost.
(f) Saving of floor space.
(g) Reduced maintenance and oil cost.

The paper plater drive of Figure IX, while not a new development, illustrates possibilities in the direct drive to this machine, where, due to the reversing nature of the load cycle, the belt drive leaves much to be desired. As noted by reference to Figure IX, a high torque wound rotor motor is direct coupled to the "drive-in" shaft of the plater. The master switch at the right center edge of the illustration is of the drum type having "forward," "reverse" and "off" positions, with or without spring return to "off" position. This master switch through the agency of the reversing primary contactors as shown within the cabinet mounted on the wall (just above the motor in the illustration) puts the motor under convenient manual control of the operator. As shown at the extreme left edge of the illustration an oil type circuit breaker is used as a primary switch with overload protection. This drive gives snappy operation of the plater. In one case production was increased 20 percent by its use. The drive is of much lower maintenance cost than belt drive as motors used are selected to meet the same type of exacting mechanical requirements as has made the motor driven reversing planer application so successful in large and modern machine shops. Because of the snappier operation fewer platers will be required to handle a given production of finished paper. This is well emphasized by the larger number of girls used to stack the books to keep the plater busy.

Figure X shows a line of paper cutter drives in a book mill. Each cutter is driven by a 4½ H.P. 230 volt, three to one field control, adjustable speed, continuous duty, direct current motor. The control may be split among three locations if desired. It is of the magnetic semi-automatic type operated from pushbuttons. Speed adjustment is manual by shunt field rheostats. This rheostat for speed adjustment, a motor disconnect safety switch, and a four-button station with "start," "stop," "fast," and "slow" buttons, are mounted at a place convenient to the operator. Two push button stations having "start" and "stop" buttons are located at the rear of the machine. The remaining equipment, consisting of magnetic contactors, relays, interlocks, resistances, etc., are panel mounted in enclosing cabinets and located remotely where the plant electrician can most conveniently periodically inspect all the cabinets of the group.

Direct drive has many justifications in the paper mill and should always be considered from a standpoint of relative economics with other suggested drives in a final decision.

The Care of Felts

By Appleton Woolen Mills

AT THE request of THE PAPER INDUSTRY, we submit herewith some suggestions relative to the care of felts. If any of these suggestions are of service to any paper mill man, we will feel very much repaid for this article:

1—Stock felts should be kept away from brick, stone, or concrete walls.
2—Stock felts should be kept from dirt and grease.
3—Stock felts should be kept well wrapped, and stored in a clean, dry, airy and, if possible, sunlit place.
4—Stock felts should be protected against mice and rats.
5—Stock felts can be additionally protected against moths by applying Napthaline approximately every three months.
6—A felt is many times made or ruined in starting. See that it doesn't come in contact with grease, dirt, nails, or other sharp objects.
7—A felt is many times made or ruined in starting. See that it is wet up thoroughly, permitted to adjust itself properly, let it take up the slack naturally, and do not tighten the felt up too soon.
8—Felt enemies: Improperly adjusted or worn suction boxes, whippers, and felt rolls, grease on journals and boxes. Guard against them.
9—It has been our general experience that if felts are kept dry in a room where the air changes frequently, and a room which is kept clean and in which the sunlight can penetrate, and if the felts are kept in wrappers which are not torn, there is no trouble with moths even when Napthaline or a similar article is not used.

To aid in the inspection of the paper as it comes from the machine, a bank of light placed under the sheet at the winder has proven of value. When the winder is stopped or run slowly the sheet is easily inspected for formation, defects, etc., the entire width. Lights placed similarly under the wire quickly show up defects and the condition of the wire.

Fall Meeting of T. A. P. P. I.

MUCH interesting discussion characterized the Fall meeting of the Technical Association of the Pulp and Paper Industry which was held at the Hotel Statler, in Buffalo, N. Y., on October 14 and 15, 1924. Following the usual custom at the Fall meetings, the meeting was of a more or less informal nature. No prepared addresses were presented, reports were informal, most of the time being given to discussion of problems of avoidable waste in the industry, vocational education, stream pollution, pulp and paper testing, sizing and drying. One hundred twenty-two members and visitors were registered. Among the prominent visitors were R. W. Hovey, of the Abitibi Power and Paper Co., chairman of the Canadian Technical section, E. P. Cameron, director of the Pulp and Paper Division of the Forest Products Laboratory of Montreal, Magnus Christiansen of the Union Co., Kristiania, Norway, president of the Norwegian Technical Assn., Paul Nauke of Aschaffenberg, Germany, president of the German Technical Assn.

TUESDAY MORNING SESSION

The meeting was opened in the Fillmore room of the Hotel Statler at 10 o'clock, Tuesday morning, President H. S. Taylor presiding.

President Taylor's Address

President Taylor addressed the meeting briefly, stating that the meeting was to be of an informal nature in accordance with the usual custom at the Fall meetings and that the time would be given over mainly to discussion of current problems of the industry. In speaking of the importance of vocational education, he mentioned the development from pioneer methods of making paper by hand at the rate of a few pounds per hour to the present machines producing at the rate of several tons per hour, being due in a large measure to education and training, and that the same will be true of the future development. For this reason vocational education has been and still is a live topic. He asked for discussion on paper drying and paper and pulp testing. Stream pollution both from the standpoint of recovery of valuable chemicals and stock now wasted, and because of the fact that states and provinces are beginning to object to mills dumping waste into rivers was a subject to be discussed under waste prevention. In regard to heat and power losses, he mentioned the savings to be accomplished by further recovery of waste heat and power. In closing, President Taylor mentioned the fact that the usefulness of the Association to the industry was measured by the activities of the members as a whole and asked that a mark be set beyond any reasonable expectation "and have the future pleasure of seeing this expectation realized, fulfilled and passed for still higher standards of usefulness to the industry which we serve."

Sec.-Treas. MacNaughton's Report

President Taylor then called on Secretary-Treasurer W. C. MacNaughton for his report.

Mr. McNaughton told of the work of the secretary's office in editing the Technical Section of the Paper Trade Journal, the publication of the abstracts of current literature and bibliography by Dr. O. J. West and his assistants, paying a tribute to their value. He spoke of volumes III and IV of the Vocational Education Textbooks on Pulp and Paper Manufacture and told how often inquiries on manufacturing problems came in from members that were covered very completely in the textbooks.

Service to Members

In handling inquiries on manufacturing problems under the plan of service to members it has been the policy to supply transcripts of the replies only to those who participate in the discussion. Several instances showing the wide scope of the subjects were given, among them being power for a fast running paper machine—whether a steam engine, steam turbine, or electric motor should be used, the question of the liming of sulphite blow pits, which received seventy replies, paper testing, piling of groundwood pulp to prevent waste and decay, and questions of sizing. Replies to a question of the effect of temperature of stock in preparation on the sizing quality of hard sized paper were very few, showing how few men in the industry know thoroughly the principles of sizing. As an example of the service, he gave one of the questionnaires on the testing of Kraft pulp for strength with the replies to it.

Mr. MacNaughton told of the satisfactory condition of the membership, referred to the extremely friendly relations with the trade journals, mentioning THE PAPER INDUSTRY, The Paper Trade Journal, Paper, and the Paper Mill.

In connection with the service to members emphasized by Mr. MacNaughton, R. S. Kellogg, of the Newsprint Service Bureau spoke of the value of the service, believing that it could be carried still further and be of still greater service. He suggested the use of standard forms with printed letterheads and serial numbers be used to give the reports a more permanent character rather than the mimeographed sheets now used.

Report of Soda Pulp Committee

The report of G. K. Spence, chairman of the Soda Pulp Committee, was next heard. The Committee is still working on waste products and lime sludge in reclaiming the products. Mr. Spence suggested that the subject of the Life of Soda and Sulphate Digesters be studied more thoroughly, referring to the recent explosion of a sulphate digester at the Lock Haven mill.

Discussion of Digester Explosions

Mr. MacNaughton mentioned a recent explosion of a rag cooker at the Lincoln mill in Merritton, Ont. The preliminary investigation showed that the metal showed crystallization at the seam. He suggested that a similar test be made on the digester at the Lock Haven mill.

Prof. R. H. McKee suggested that information might be gained from the experience of the Chicago and Northwestern railroad in investigating the action of caustic soda on metal under somewhat similar conditions.

Mr. Kellogg told of the possibility of determining crystallization in metal by a portable x-ray apparatus.

F. C. Clark, of the Hawthorn Paper Co., suggested that the subject of boiler and digester explosion be brought to the attention of the Bureau of Standards. He mentioned the fact that Dr. Burgess, the director, had done some valuable work for the government along this line.

This was followed by a motion of R. B. Wolf that the Bureau of Standards be asked to make an investigation and test to determine the causes of the digester explosions, which was carried.

Report of Sulphite Pulp Committee

B. S. Summers, chairman of the Sulphite Pulp Committee then gave the report of this committee. He outlined their work which was confined for the present to determine a practical method for determining the qualities of pulp and the study of bleaching problems.

Report of Dyestuff Committee

K. T. King, the chairman, then reported for the Committee on Dyestuffs. The chief work of the Committee this year will be the completion of the work in connection with the chapter on dyestuffs in volume IV of the vocational education texts. As a supplement, a chart has been prepared giving the reactions of all dyestuffs to light and substances used in paper making. The problem of two sidedness was a difficult one which they had been working on with little success as yet. This seems to be mainly a question of sizing. On the question of foam killers the committee has obtained from the Fleischman Co. a very efficient one which has been tried out with great success.

Report of Delegates from Equipment and Supply Assn.

I. R. McCall, of the Mill Equipment and Supply Association, which was recently organized in New York City, outlined the work and objects of this association as follows:

"At the meeting of the American Pulp and Paper Association this year, the president of the Association made the suggestion that the equipment and supply men organize themselves in a way that would be of some assistance to the paper trade in general, so that they could supply concrete information at all times, and not have it come from any source and every source and accomplish nothing.

"At the same time, we felt that the equipment men were interested in the problems that the paper trade in general are interested in, and particularly importations and tariff, and suggested at that time that they organize an association.

"This has been done in New York City last week. The Board of Directors has been elected, or has been selected, and they have been asked to serve. We have not at this moment heard from all of the men who have been selected, but each one of the members on the Board represents some part of the supply and equipment, representative men of the supply or equipment industry, who serve the paper trade.

"The objects of the Association can best be given you from an extract from their application for a charter, 'The particular objects of this incorporation are: It is formed to co-operate and assist the paper and pulp industry of the United States to foster trade and commerce, and the interests of those having trade business and commerce in the paper and pulp industry of the United States; to promote and safeguard the common business interests of its members, to correct and reform as far as possible the importation of paper and pulp into the United States from any and all countries excepting Canada, and the abuses relative thereto or affecting the same; to produce uniformity and certainty of classification of imported pulp from any and all countries except Canada, and the examination of proper or suitable or correct tariffs thereof, and to do such other and further acts as these relative thereto that may be found proper, necessary, or convenient so far as the same are permitted by the laws of the State of New York to corporations ordinarily under this act.'

"In bringing this Association before you, we will supply your secretary with a complete record of its organization, its objects, and its purposes. We ask your co-operation. We ask any supply men who are present to affiliate themselves with us, and I would be very much pleased to hear a motion, at least giving us your moral support, because we don't ask your financial.

Report of Heat, Light and Power Committee

In his oral report for the Heat, Light and Power Committee, Chairman W. W. Cronkhite told of the work of this committee in attempting to obtain information on a number of subjects, mentioning steam accumulators, bearings, moisture meters, machine room construction and the burning of bark. The Committee found no difficulty in obtaining information from engineers of the allied industries, but found it much more difficult to get papers from engineers in the mills.

Allen Abrams, of the Cornell Wood Products Co., asked if the Meyer formula for determining groundwood power had been checked in actual operation. Mr. Cronkhite answered that this has not been done because of the many varying operating conditions; at the present time it was almost impossible to get a formula to cover them. Many mills have, however, made tests on power consumption.

Vocational Education

In the absence of Mr. Williamson Mr. MacNaughton gave the report of the committee on Vocational Education and Training which included replies to inquiries sent to a number of mills regarding their activities along this line.

Training for Industry in Paper Mills

It is known that considerably more is being done in vocational education and training than is indicated by the reports received directly in response to an inquiry sent out to mills representing the membership. In spite of the sparsity of the replies that have come in some of them are worthy of emphasis, showing as they do how some concerns after a number of years' experience have their systems firmly established. The continuance of outstanding mills in this work is clear evidence of how training for industry is valued.

Strathmore Paper Company, Mittineague, Mass.

Correspondence Courses:

Institute of Industrial and Domestic Arts—		
Full paper and pulp courses	16	
Partial courses	5	
Total	21	21
Northeastern University—		
Law, 4-year course leading to LL.B.	1	
Commerce and finance, 4-year course leading to B.Sc.	10	
Special engineering, 3-year course	2	
Total	13	13
Grand total		34

Several are also taking the courses of International Correspondence Schools, La Salle Institute and other institutions.

Assistance is supplied by someone connected with the company when desired by the students.

Scholarships:

Two scholarships at Worcester Polytechnic Institute obtained through a contribution of $10,000 to the endowment fund are awarded, one to a former employe and the other to the son of an employe. They are both engaged at the mills during the summer vacations.

B. D. Rising Paper Company, Housatonic, Mass.

Correspondence Courses:

Several are taking pulp and paper correspondence courses. Among them are the following:

College men	2
Backtender	1
Cost clerk	1
Machine tender	1
Shipping clerk	1
	6

The expense is refunded when the course is satisfactorily completed.

S. D. Warren Company, Cumberland Mills, Me.

Classes:

The pulp and paper classes are continued as in former years.

Smith Paper Company, Lee, Mass.

Several are taking pulp and paper courses. The expense is refunded on satisfactory completion of the course.

Paterson Parchment Paper Company, Passaic, N. J.

Correspondence Courses:

A considerable number are taking correspondence courses, the expense of which is refunded on satisfactory completion.

Among the schools which are patronized are: Y. M. C. A., I. C. S., Business Training Corporation, Hayes Combustion School, and Babson Institute.

Hammermill Paper Company, Erie, Pa.

Correspondence Courses:

In correspondence courses there are 37 or more students.

These are supplemented by an instructor who holds a weekly study class to aid the students.

Scholarships:

While the report does not mention them it is known that Hammermill Paper Company has financed two fellowships, one at Yale and the other at the University of Syracuse, which last year were awarded to employes of the company.

Bird & Son, Inc., East Walpole, Mass.

At this plant where there are a number of technical graduates and high school students are employed, many of them are in co-operation with Northeastern University on a part-time basis. A definite system of training has been in operation. This was developed by George R. Wyman and B. D. Rogers, manufacturing manager and labor bureau manager, respectively.

This plant combines a study of the textbooks with written weekly reports on the ground covered and a stated time in each department in logical order for practical training. A written and an oral examination are required at the end of each stage in the course. The time spent in each department varies from one week to two months, totaling about a year. The mill is covered in the following order: Laboratory, stock handling, sorting room, beaters, paper machines, waste water, transfer, finishing, box shops.

This is the first instance to our knowledge that a mill has developed a definite system of training suited to its own needs. It is worthy of investigation by mills which are beginning to realize that training for industry is necessary work of an industry if it is going to be continuously successful.

Progress on Text Books

Mr. MacNaughton told of the work of the committee in increasing the use of the textbooks. He described the pamphlets sent out describing them and urged the members to interest themselves in this advertising of the books and educational courses in the mills.

Mr. Kellogg reported that the sale of the books to date totaled 7786. Volume V. was in the hands of the publishers and would be ready at the winter meeting. He also urged that the members help in spreading the gospel by distributing the leaflets describing the educational courses in the mills As a result of sending out a number of the leaflets, the office had handled a number of inquiries regarding vocational education.

Mr. King told of an instance where men from the University of Cincinnati had come to him for subjects for theses. He suggested that the Association prepare a list of subjects for men in universities to work on—that this should result in mutual benefit.

Grellet Collins of the Dill & Collins Paper Co. mentioned the co-operation of his company with one of the universities where two students at a time came into the mill, worked on theses, giving the company copies of reports sent in to the university.

Secretary MacNaughton called on Mr. Summers for his ideas on vocational education, who replied, saying that what was needed most in the vocational enterprise was "first-class pudding sticks to stir up pudding, intimately mixing practical and technical men." He cited lack of appreciation of the other fellow's viewpoint on the part of both practical and technical men.

T. L. Crossley mentioned an address of the late Sir Wm. Price on the place of the technical man in industry in which he brought out the point that the technical man was often too prone to look for credit. Mr. Crossley also reviewed the Industrial and Domestic art educational courses.

After some further discussion on the subject from different members, giving various experiences, the morning session adjourned.

AFTERNOON SESSION

The subjects of white water wastes and paper drying were taken up at the afternoon session, which convened at 2:15 with R. B. Wolf, the chairman of the Waste Committee, in the chair.

White Water Waste

John D. Rue of the Forest Products Laboratory explained the service report and code for white water data, whereby results in mills making similar grades of paper can be compared, thereby stimulating further increases in efficiency.

R. W. Hovey, of the Abitibi Power and Paper Co., then told of the system of weirs used in this mill. This includes a weir at each of the 20 sources of white water waste which are checked by a weir measuring the total effluent. In this way a double check is kept on operation, any irregularities in the handling of valves, condition of wires, blowpit bottoms, deckle straps, etc., immediately showing up. Samples are taken at intervals and filtered through filter paper. In this manner the system has paid for itself many times over. The white water loss is determined by balancing the pulp against the wood.

Mr. Abrams brought up the question of the value of the stock that had passed through the wires.

Chairman Wolf said that most white water losses were due to faulty equipment rather than the amount of fiber that passed through 60-mesh wire.

J. P. Fagan said that it was the custom at the Burgess mill to figure loss on the amount retained on a 100-mesh screen.

John Traquair of the Meade Pulp and Paper Co. estimated the loss on their machines at 1000 pounds per day, which is now recovered in settling tanks. The recovered material consists of one-third fiber and two-thirds clay, which is returned to the broke beaters.

R. S. Hatch of the Peerless Paper Co. told of the situation in Ohio, where mills have until 1926 to clarify their effluent, the cities being forced to install sewage disposal systems. At the Peerless mill they are installing Dorr savealls.

Mr. Clark said that somewhat similar action had been taken in Michigan. He described the saveall installation at the Kalamazoo Vegetable Parchment mill, which consisted of a long tank with scrapers on the bottom carrying the settled material to one end.

Miss McGrath described experiments on the use of the Boothal coagulent in a book mill. This substance coagulates all of the very fine fibers, thus removing the cause of slime formation. The uncoagulated fibers adhere to the sides of the tank, collect other material, decaying and forming slime.

Paper Drying

Wm. Goldsmith read a paper on drying in which he described tests ran at the Pejepscot Paper Co. Temperature control by the use of copper-iron thermocouples was advocated.

This was followed by a discussion of the relative merits of buckets and siphons in removing condensed water from the dryers, Mr. Clark and Mr. Bearce agreeing that siphons were the more reliable, particularly on machines running at high speed.

A. B. Clark of the Ross Engineering Co. mentioned the more important features of drying being the loss of heat in the ventilators, the removal of moisture from the face of the sheet by ventilation, and in many cases not enough water being taken from the sheet at the wet end before the paper enters the dryers.

Secretary MacNaughton asked for figures from the mills to formulate the drying code.

To overcome much difficulty with steam traps and give better drying efficiency, Mr. Goeppinger suggested the use of oil separators in the supply and exhaust pipes.

The session adjourned after reading a telegram from L. J. Dornfeldt, a well-known sulphite engineer of Norway, now visiting mills in this country, expressing regret that he was unable to attend the meeting.

WEDNESDAY MORNING SESSION

Discussion at the Wednesday morning session covered the subjects of paper testing and relative humidity, the use of glue for coating paper, effect of temperature of stock preparation and drying on the sizing qualities of the paper.

The session was opened at 9:30 by President Taylor, who called on Chairman Curtis of the Paper Testing Committee to lead the discussion on paper testing and relative humidity.

Paper Testing and Relative Humidity

Mr. Curtis reviewed an article on the subject by E. O. Reed, which advocated a change of standard from 65 per cent to 50 per cent relative humidity. Members were asked to submit data to enable the committee to recommend the most suitable standard.

Secretary MacNaughton was of the opinion that the use to which the paper was put should govern the conditions of testing.

Miss Kiely favored a lower humidity standard for the folding test.

Mr. Clark said that a 50 per cent relative humidity was the most desirable for rag papers, but that a higher humidity was more suitable for other kinds.

H. L. Peckman of the Hammermill Paper Co. was in favor of keeping the standard at 65 per cent. He was of the opinion that a high humidity was the more suitable for printing presses.

Chairman Curtis reviewed an article of his on "Humidity in Paper Testing," covering a number of tests, in which it was found that a 50 per cent relative humidity was better applied to only about 2 per cent of the papers tested.

Mr. Van Vechten mentioned the difficulty in maintaining a relative humidity of 65 per cent in the winter. In many lithographic plants this is kept as low as 40 per cent.

Mr. Kellog said that in the New York Tribune plant, the most modern of its kind, that low humidity conditions prevailed and had reduced breaks considerably; however, many publishers wanted moist paper.

Mr. Summers mentioned the control of humidity being an elementary principle in textile mills.

Remarking on the Schropper folding tester, Mr. Schniewind said that since the instrument tested on one line only, a great variation often resulted and that the instrument was not suitable for use on all kinds of paper.

Mr. Bergholtz argued against the use of this test.

Mr. Summers said that he had come to the conclusion that an old papermaker could tell more by feeling and smelling of a sheet of paper than was possible by using any of the testing machines. He said that some specifications, especially those of the government, were little more than interesting reading.

The humidity question was left open until the next meeting.

At this time Mr. Magnus Christiansen, managing director of the Union Company in Kristiania, Norway, and president of the Norwegian Technical Association, was introduced. In acknowledging, Mr. Christiansen remarked that apparently the problems of papermaking were the same in this country as in other parts of the world.

The Use of Glue in Coating Paper

Dr. V. H. Gottschalk next gave a paper reviewing a series of experiments conducted at the Bureau of Standards for the National Glue Manufacturers' Association on the use of glue in paper coating. Of the 30 or 40 different grades of glue used, Dr. Gottschalk concluded that more than half were suitable for coating mixtures. It was important to select the right kind. Because of the fact that the glue coating mixture could not easily be made waterproof, the chief opposition was in its use for lithographic work.

Mr. Traquair said that up until twenty years ago all lithographic paper had been made with glue. When casein was first introduced, papermakers said they couldn't use it because it was waterproof.

On the question of the colloidal action of glue and clay, Dr. Gottschalk suggested that the clay men co-operate in a similar manner to investigate this subject.

Dr. Gottschalk was thanked for his excellent contribution.

Dr. Hugh P. Baker remarked that since casein was made in this country only as a last resort, manufacturers were dependent on Argentina for a regular supply at a reasonable price. In connection with this, Mr. Traquair said that the use of casein as a coating material was a criminal waste of a valuable food material.

Paper Sizing

Following the discussion on the use of glue, the problem of the effect of temperature in drying and stock preparation on the sizing quality of paper was gone over hastily.

Mr. Spence told of experiences where difficulty in sizing was encountered with alkaline water and a temperature of 100 deg. F. in the beaters and Jordans, which was remedied by cooling the stock.

Mr. Traquair told of the use of silicate of soda, or colloidal substances such as glue or rosin, to counteract the effect of hard water. Dyeing cotton by the old process was similar to sizing and coating of paper. Similar addition of colloids was recommended where hard water was used.

In connection with sizing at high temperatures, Mr. King told of a case where the paper was sized perfectly before striking the water box, which had the same effect on the film of rosin as cold water on hot glass. The rosin film was immediately broken up. Better results were obtained by adding the alum first. The addition of aluminum chloride before the milk of rosin was of great benefit.

WEDNESDAY AFTERNOON SESSION

Methods of determining the quality of pulp, the use of seed flax as a raw material for paper pulp, bleached pulp from decayed wood were the topics of discussion at the Wednesday afternoon session, which opened with B. S. Summers, of the sulphite pulp committee, in the chair.

The work of the Forest Products Laboratory on the use of seed flax as a raw material for pulp was reviewed by S. D. Wells. The article on this subject by Rue, Wells and Schaefer was published in the October number of THE PAPER INDUSTRY.

Dr. Rue, of the Forest Products Laboratory, then reviewed their work on use of decayed wood in making bleached pulp.

R. N. Miller, also of the Forest Products Laboratory, led the discussion on methods of determining pulp quality. A review of plant methods was given, an effort being made to standardize these tests. After much discussion of the various methods in present use the subject was left open for the next meeting.

SEMI-ANNUAL DINNER

The meeting was concluded at the semi-annual dinner at the Hotel Statler at seven o'clock, at which about 100 were present. Entertainment features arranged by E. R. Low, of the Beaver Products Company, added to the enjoyment of the dinner.

President Taylor, acting as toastmaster, introduced Congressman S. Lowell Dempsey, of Lockport, N. Y., who gave the main address of the evening.

Dr. Hugh P. Baker spoke of the growth of the association and of its becoming of more and more value to the industry and the American Pulp and Paper Association.

Dr. R. H. McKee, of Columbia University, one of the organizers of the association, gave interesting personal reminiscences, reviewing the history of the association and telling of its organization and growth.

After the convention a number of the mills in the vicinity were visited, among them being the new mill of the Daily News Paper Corporation at North Tonawanda, N. Y.

PARTIAL LIST OF REGISTRANTS

Allen Abrams, Cornell Wood Products Co., Cornell, Wis.; J. Anderson, J. Anderson & Co., N. Y. City; C. K. Andrews, Itasca Paper Co., Grand Rapids, Minn.; A. E. Armstrong, Armstrong Mch. Wks., Three Rivers, Mich.

H. P. Baker, Am. Pulp. & Paper Assn., N. Y. City; W. E. B. Baker, Cont'l Bag & Paper Mills, N. Y. City; Robert T. Baldwin, The Chlorine Inst., N. Y. City; Geo. D. Bearce, Newsprint Service Bureau, N. Y. City; F. K. Becker, Bird Machine Co., S. Walpole, Mass.; O. L. Berger, G. D. Jenssen Co., N. Y. City; F. A. Bergholtz, Am. Tel. & Tel. Co., N. Y. City; Dr. Galo W. Blanco, Du Pont Fibersilk Co., Buffalo, N. Y.; C. A. Booth, Buffalo Forge Co., Buffalo, N. Y.; R. L. Bosworth, Crocker-McElwain Co., Holyoke, Mass.; B. Branch, Can. Barking Drum Co., Toronto, Can.; E. B. Brook, P. H. Glatfelter Co., Spring Grove, Pa.

Donald E. Cable, Oxford Paper Co., Brooklyn, N. Y.; E. P. Cameron, Forest Prod. Laboratory of Can., Montreal; G. H. Chidester, THE PAPER INDUSTRY, Chicago; Magnus Christiansen, Union Co., Kristiania, Norway; A. B. Clark, J. O. Ross Eng. Co., N. Y. City; F. C. Clark, Hawthorne Paper Co., Kalamazoo, Mich.; P. W. Codwise, Beaver Prod. Co., Buffalo, N. Y.; Grellet N. Collins, Dill & Collins Co., Philadelphia; John Cornell, The Paper Mill, N. Y. City; Edward B. Cowles, Am. Eng. Co., Philadelphia; W. W. Cronkhite, Gen. Elect. Co., Schenectady, N. Y.; T. Linsey Crossley, Pulp & Paper Magazine, Gardenvale, P. Q.; F. A. Curtis, Am. Writing Paper Co., Holyoke, Mass.

J. A. De Cew, Process Eng., Inc., N. Y. City; William F. Dewey, R. D. Rising Paper Co., Housatonic, Mass.; J. C. Dickson, Provincial Paper Mills, Port Arthur, Ont.

G. L. Easterberg, The Beaver Prod. Co., Buffalo, N. Y.

Jas. P. V. Fagan, Toronto, Ont.; H. H. Fiebert, Upson Co., Lockport, N. Y.; Herbert H. Fish, Jr., Great Western Paper Co., Ladysmith, Wis.; L. M. Fleming, Fletcher Paper Co., Alpena, Mich.; M. C. Fleming, Dorr Co., N. Y. City; H. W. French, Hammermill Paper Co., Erie, Pa.; E. B. Fritz, THE PAPER INDUSTRY, Chicago.

O. P. Gephart, Miami Paper Co., West Carrollton, O.; P. H. Glatfelter, P. H. Glatfelter Co., Spring Grove, Pa.; Otto J. Goeppinger, Armstrong Mach. Wks., Three Rivers, Mich.; W. F. Goldsmith, Standard Paper Co., Kalamazoo, Mich.; F. Gordon, Lee Paper Co., Vicksburg, Mich.; V. H. Gottschalk, Nat'l Assn. of Glue Mfrs., Washington, D. C.; C. S. Gravatt, Western Union Tel. Co., N. Y. City; G. J. Groh, Du Pont Cellophane

View in Beater Room in Large Mill Equipped with 44 Valley Holland Beaters

Valley Holland Beaters Have

1—A combination Lighter Bar and Stand which gives rigidity, endurance and strength. The Lighter *rests on its own sole-plate*, holding the beater always rigid, thus prolonging its life and insuring greater efficiency.

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A Few Users

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2. Mac Sim Bar Paper Co. 16
3. H. W. Johns-Manville Co., Inc. 21
4. American Boxboard Co. 14
5. Barret Mfg. Co..... 32
6. Eddy Paper Corporation 12
7. Certain-teed Products Company 31
8. Marathon Paper Mills Company 16
9. Bogalusa Paper Co..... 18
10. River Raisin Paper Co. 44
11. Hummel & Downing... 17

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S. W. Jacobs, Electro Bleaching Gas Co., N. Y. City; R. W. Jenkins, Ohio State University; J. D. Jenssen, G. D. Jenssen Co., N. Y. City; E. J. Johnstone, Paper Makers Chem. Co., Holyoke, Mass.

B. L. Kassing, Hammermill Paper Co., Erie, Pa.; Thos. J. Keenan, Paper, N. Y. City; R. S. Kellog, Newsprint Service Bureau, N. Y. City; D. E. Kiaer, Buck, Kiaer & Co., N. Y. City; Helen U. Kiely, Am. Writing Paper Co., Holyoke, Mass.; K. T. King, E. I. Du Pont de Nemours & Co., Inc., Chicago; C. F. Kinney, Hercules Powder Co., Wilmington, Del.; Arthur F. Klein, Hammermill Paper Co., Erie, Pa.; Paul Koenig, Cont'l Bag & Paper Mills, N. Y. City.

A. R. Lawson, Appleford Counter Check Book Co., Ltd., Hamilton, Ont.; R. W. Leeper, H. S. Taylor & Co., Dayton, O.; John A. Limpert, Kimberly-Clark Co., Niagara Falls, N. Y.; L. E. Longstreth, Gardner & Harvey Paper Co., Middletown, O.; E. R. Low, Beaver Prod. Co., Buffalo, N. Y.; R. M. Lowe, Fitchburg Paper Co., Fitchburg, Mass.; C. L. Lufkin, Calvert Lithographing Co., Detroit, Mich.

W. G. MacNaughton, T.A.P.P.I., New York; Ralph Mair, Dill & Collins Co., Philadelphia; I. R. McCall, Detroit Graphite Co., Chicago; L. E. McGrath, Booth Chemical Co., Elizabeth, N. J.; Ralph H. McKee, Dept. of Chem. Eng., Columbia University; A. Y. Meeker, Alberene Stone Co., N. Y. City; Jas. D. Miller, York Haven Paper Co., York Haven, Pa.; R. N. Miller, Forest Prod. Laboratory, Madison, Wis.; D. L. Mills, Alberene Stone Co., N. Y. City; H. A. Morrison, Oliver Continuous Filter Co., N. Y. City.

W. A. Nivling, Huron Milling Co., Boston, Mass.; R. H. Norris, Dennison Mfg. Co., Framingham, Mass.

Nathan G. Osborne, Cornell Wood Prod. Co., Cornell, Wis.

H. L. Peckham, Hammermill Paper Co., Erie, Pa.; Fred W. Poppe, Kimberly-Clark Co., Niagara Falls, N. Y.; R. W. Pryor, Jr., R. B. Wolf Co., New York City.

J. R. Rawlings, The Upson Co., Lockport, N. Y.; John D. Rue, Forest Prod. Lab., Madison, Wis.

Thomas H. Savery, Jr., Nash Eng. Co., Bird Machine Co., Chicago; R. C. Schilly, DuPont Cellophane Co., Buffalo, N. Y.; H. L. Schniewind, Foreign Paper Mills, Inc., N. Y. City; B. W. Scribner, Bureau of Standards, Washington, D. C.; Wm. Sharples, DuPont Cellophane Co., Buffalo, N. Y.; J. H. Sherman, Huron Milling Co., Boston, Mass.; C. A. Silvis, Itasca Paper Co., Grand Rapids, Minn.; A. C. Skjenneberg, Union Co., Kristiania, Norway; G. K. Spence, New York and Pa. Paper Co., Johnsonburg, Pa.; A. O. Spierling, Hammermill Paper Co., Erie, Pa.; Bertrand S. Summers, Port Huron, Mich.

Chas. R. Tait, Hammermill Paper Co., Erie, Pa.; H. S. Taylor, Dayton, O.; R. T. Thornton, Buffalo Forge Co., Buffalo, N. Y.; John Traquair, Mead. Pulp & Paper Co., Chillicothe, O.; E. C. Tucker, Chem. Paper Mfg. Co., Holyoke, Mass.

A. S. Van Ostrand, DuPont Cellophane Co., Buffalo, N. Y.; Geo. C. Van Vechten, Stecher Lithograph Co., Rochester, N. Y.; Chas. D. Viergiver, Stecher Lithograph Co., Rochester, N. Y.

Ben Wahl, Detroit Sulphite Pulp & Paper Co., Detroit, Mich.; M. C. Walsh, Mellon Institute, Pittsburgh, Pa.; S. Wang, Riorden Corp., Hawkesbury, Ont.; S. D. Wells, Forest Prod. Lab., Madison, Wis. R. M. Williams, Williams Apparatus Co., Watertown, N. Y.; R. B. Wolf, The R. B. Wolf Co., N. Y. City.

R. J. Zaumeyer, Kimberly-Clark Co., Niagara Falls, N. Y.

The Diamond Power Specialty Corporation, Detroit, Michigan, manufacturers of the Diamond Valve-in-Head Soot Blower, will have an exhibit in Booth 17, at the Mechanical Engineering Power Show, Grand Central Palace, New York City, December 1 to 6, 1924.

Northern New York News

November 1, 1924.

N. Y. Div. of Superintendents Elects Officers

William Brydges, of the Defiance Paper Company of Niagara Falls, was elected chairman of the Northern New York district of the Paper Mill Superintendents' Association at the meeting held in Watertown, October 25th. Mr. Brydges succeeds Homer Stafford, superintendent of the Knowlton Bros. mill in Watertown. Harry E. Rockwood, superintendent of the Champion Paper Company mill of Carthage, was elected vice-president, and Fred J. Rooney, of the Upson Board Company of Lockport, was elected secretary.

A proposal was brought up that the Northern New York division add equipment to the pulp and paper section of the State School of Forestry, at Syracuse University. This proposal will be acted on at a future meeting. The proposal specified that the faculty of the school be allowed to designate what equipment should be added.

M. J. Argy, of Niagara Falls, general chairman of the national convention to be held there June 5 to 7, 1925, invited the members to attend.

Nearly 90 members of the Northern New York division were in attendance and a number of technical papers were read. Frank M. Williams, consulting chemical engineer, read a paper on "Freeness Control in the Pulp and Paper Mill." A resume of his paper follows:

Williams on Freeness Control

"We will consider the making of freeness control under two heads: first, in the ground wood mill; second, the advantages of uniform stock in the paper mill. Someone has said that 'good paper is made in the ground wood mill,' and I think you will agree with me on this statement. Now, it doesn't stand to reason that the same ground wood which is best fitted for making of high-grade specialties is at the same time best fitted for the making of tissue or manila wrapping or news. In many mills ground wood is purchased in the open market, and yet the superintendent is expected to make almost any kind of paper from it.

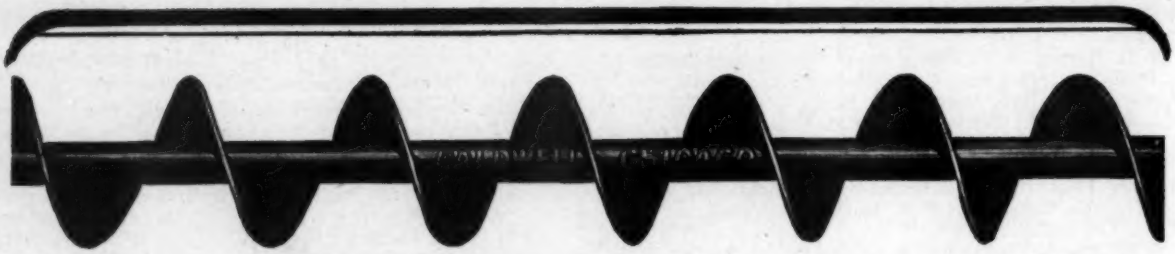
"The paper you make is subject to the most exacting specifications, such as pop test, weight, sizing, etc., and yet one of the principal raw materials you are expected to make from it is purchased without any specifications whatever.

"This brings us to the point that at no distant day you will see ground wood pulp purchased on definite specifications of freeness, thereby enabling you to get the pulp best suited to the kind of paper you are trying to make.

"Now, a word as to the advantages of freeness control in the ground wood mill, in getting not only the kind of pulp best suited to your needs, but in getting maximum production off from each stone per horsepower per ton of pulp produced.

"A running report of the freeness of the ground wood you are making shows you at a glance whether or not the stones need jigging and whether or not they are consuming valuable horsepower while in a condition not producing their proper tonnage of pulp. For example, if your standard freeness of desirable pulp is set at 115 degrees, and the report shows that the stock is running 85 degrees free, it indicates that the stone needs attention right away. As you know, all natural stone grinders vary in grit and hardness. Therefore, the common practice in many ground wood mills of dressing at regular intervals of say seven, nine, or twelve hours, may be all right for some of the grinders, but for the reasons stated above will not meet the requirements of all of them. By checking up the freeness of the pulp produced you will find when holding the freeness of the product constant that different stones require different periods of dressing, and in some cases it will be found advantageous to use different methods of dressing even upon different stones in order to produce the maximum tonnage of pulp of the required degree of freeness.

"Let us now consider the matter of stock of uniform freeness in the paper mill. The freeness of the ground wood has an important bearing upon how the stock should be treated in the beaters. There are certain problems in beater sizing which can only be explained in the freeness of the beater stock, both in the original stock furnished to the beater and the final freeness of the beaten stock. The beater plays two functions in the preparation of paper stock. In many mills



Stepping Forward

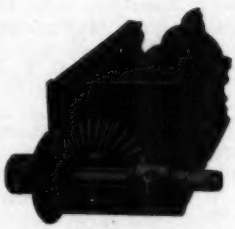
Discharge Box End for Steel Conveyor Box

MANY years ago Caldwell brought out the Sectional Flight Screw Conveyor, which at that time was a great improvement over the old type of conveyor with the wood or tin paddles or flights.

Later the Caldwell "Helicoid" or continuous flight conveyor was perfected and placed on the market. This was another step in perfecting the screw conveyor. The flight of the Caldwell "Original Helicoid" conveyor is rolled from a single strip of metal. Even before the pipe is inserted in the flight, the flight is strong enough to resist the lateral pressure due to pushing the material forward. As the flight is of one piece there are no laps or rivets to interfere with the flow of the material.

In connection with our Screw Conveyor, we make a complete line of fittings, including hangers, linings, couplings, troughs, box ends, drive ends, etc.

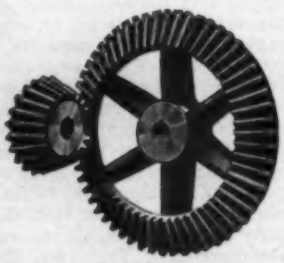
We offer you the benefit of our experience to aid in the elimination of waste in the handling of materials in your plant. Address Caldwell, or the nearest Link-Belt office.



Countershaft Box End for Wooden Box

Floor Type Worm Gear Housing

Cast Iron Stub Discharge Spout with Slide Gate



Bevel Gears

Solid Cast Iron Pulley

Caldwell Products

Power Transmission Machinery—Bearings, Shafting, Pulleys, Machine Molded Gears, Cut Gears, Rope Drives, Chains and Wheels.

Elevating and Conveying Machinery — Helicoid Conveyor and Accessories, Belt Conveyors, Chain Conveyors, Elevator Buckets, Boots and Casings, etc.

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CALDWELL

it is nothing more than a mixer to get the furnish thoroughly together, the roll being set high with little or no brushing effect. In other cases, the roll is set down and the beater acts not only as a mixer but also for refining, brushing out and hydrating the fiber. The degree of this hydration has a very important bearing upon how the final sheet will be sized and also the slowness or freeness of the stock on the machine, so that freeness control of the finished beater stock furnishes a definite end point of beating or tells when the beater should be dropped. I do not mean to say that every beater should be dropped only on a freeness test, but what I do mean is that a few freeness tests will help you to establish uniform beating conditions.

"We will now consider the advantages of uniform stock upon the machine. Although harder to estimate the exact savings in the machine room from freeness control, undoubtedly these are much greater than the actual savings in horsepower back in the grinder room. You know that uniformity of stock means uniformity of production on the machine and uniformity of production, freedom from breaks, better formation and better finish mean increased production upon the machines. A machine does not have to be down but a few minutes to have the loss run into hundreds of dollars, taking into account plant investments and overhead as well as loss of production during the interval.

"The writer knows no better aid to the superintendent in securing these results than controlling the freeness of stock, beginning back in the ground wood room. This simple matter does not require an army of expert chemists. Anyone who can get the base weight of a sheet of paper or make a moisture test on pulp can make freeness tests upon the Williams standard freeness tester, and this data and these reports are designed not so much for the office as a practical aid to the superintendent of both the ground wood mill and the paper mill in securing more uniform and increased production."

Weston Describes Papermaking Course

H. E. Weston, assistant professor of pulp and paper manufacture in the New York State College of Forestry, in Syracuse University, read a paper on "The Why and Wherefore of Our Course in Pulp and Paper Making." After briefly tracing the history of paper from the time of the first substitutes to the invention of the first wood pulp process in 1840, Professor Weston said that the world never had enough paper until this process was invented. "Likewise," he said, "as long as the public can get a cheap and abundant supply of wood, it is doubtful if a saturation point will ever be reached. Today we have about 22,000 newspapers in the United States and Canada, with about 2,000 of them being considered as the so-called English language dailies.

"There are printing presses in some instances turning out over 40,000 newspapers per hour. The record for newsprint consumption of one edition of the New York Times was made this year when a single Sunday edition consumed 877 tons of newsprint. Converting this paper back to raw material gives approximately 1,200 cords of wood. The average yield of Adirondack spruce is seven to ten cords per acre, so that at a low estimate 100 acres of timberland would be required to furnish this quantity of wood.

"Another leading daily uses approximately 240 tons of newsprint a day. Figure the amount of timber required and the acreage cut over during a period of forty, fifty or sixty years, which is the approximate length of time determined for a rotation of a spruce crop to pulpwood size. Contrast requirements of such a newspaper with the first newspaper in the colonies, the Boston News-Letter, which appeared in April, 1704, on two pages of hand-made paper, each nine inches by 12 inches.

"The annual consumption of pulpwood in the United States has increased from approximately 2,000 cords in 1870 to over 6,000,000 cords in 1920. Without a doubt over 100,000,000 cords of wood have gone into the manufacture of paper in the United States since woodpulp was first introduced in this country. The present paper industry, subsisting on a few standard papermaking woods like spruce, hemlock, balsam, etc., is largely concentrated in the coniferous forest belts of New England, New York, or the regions of the Great Lakes and in the northern Alleghanies. According to the latest available statistics, there are 170 paper mills and 97 pulp mills within the boundaries of New York State.

"How long can our industry be maintained with our present timber supply and rate of cutting? From all indications, new fields of raw material must soon be drawn upon or old fields redeveloped. If new fields are preferred it will mean the migration of the industry away from the existing markets and the facing of technical problems in the use of unfamiliar species.

"With these thoughts in mind the New York State College of Forestry has defined forestry as not only the repeated raising of crops of timber in the shortest possible rotation on soils unsuited to agriculture, but also the marketing and utilization of the forest crops. With such an interpretation it has been possible to develop our work in pulp and paper manufacture.

"The first instruction in pulp and paper manufacture at the college was given in 1918 in a course organized to afford regularly enrolled students a general understanding of the processes employed in the manufacture of a finished product so largely dependent upon the forest for its raw material. While students receiving this instruction were not especially fitted for positions in the papermaking industry other than as regularly trained foresters, they often found themselves in permanent positions in pulp and paper mills. To some extent these men proved to be liason officers, because it was partially due to the experience of these men that in the fall of 1920 the courses in pulp and papermaking at the college were completely reorganized with the object of training interested students specifically in the pulp and paper industry.

Willis H. Howes, vice-president of the Knowlton Brothers mill of Watertown, gave a short talk on encouraging teamwork between the men who make the paper and the men who sell it.

George W. Sisson, of Potsdam, president of the Racquette River Paper Company and past president of the American Pulp and Paper Association, was the principal speaker at the evening banquet. Mr. Sisson spoke on the initiative of private capital and declared that demagogues are threatening the foundations of the American industrial system.

Herrings Mill to Be Sold

The Herrings paper mill and the village of Herrings, now owned and operated by the St. Regis Paper Company, one of the Floyd L. Carlisle group, is to be purchased by the new firm, Taggart Brothers Company, Inc., which is supplanting the Taggart Brothers Company, according to a statement made by Bryon B. Taggart, president of the company. The organization of the new company will be the same as that of the present company. The Herrings mill will be changed over from the manufacture of box board to the manufacture of paper bags. Possession will be given within 30 days and a meeting of the stockholders of the St. Regis company has been called to give formal ratification of the action of the directors.

The Taggart Brothers Company already operates a mill in Watertown, manufacturing paper bags, using mainly in this process jute and old rope. The machinery is practically all patented by Taggart Brothers and is an entirely different type than that used in the Herrings mill. The purchase includes all of the wood grinding machinery and the sulphite plant, and a thorough survey of the mill will be made to determine what changes will be necessary.

The mill is on the Black river and the power was sold in October, 1922, to the Power Corporation of New York by the St. Regis Paper Company. The Power Corporation of New York is a consolidation of all the water powers controlled by Floyd L. Carlisle. The Herrings mill under Taggart management will purchase its power from the Power Corporation.

The original Herrings mill was built in 1890 by the late W. P. Herring. A ground wood mill was built and a settlement quickly grew up around it. The enterprise prospered and a short time later a sulphite mill was built. A few years later a board mill machine was installed and large quantities of this product were manufactured for the Armour interests in Chicago. Mr. Herring later sold his interests to D. M. Anderson and the late George C. Sherman, controlling

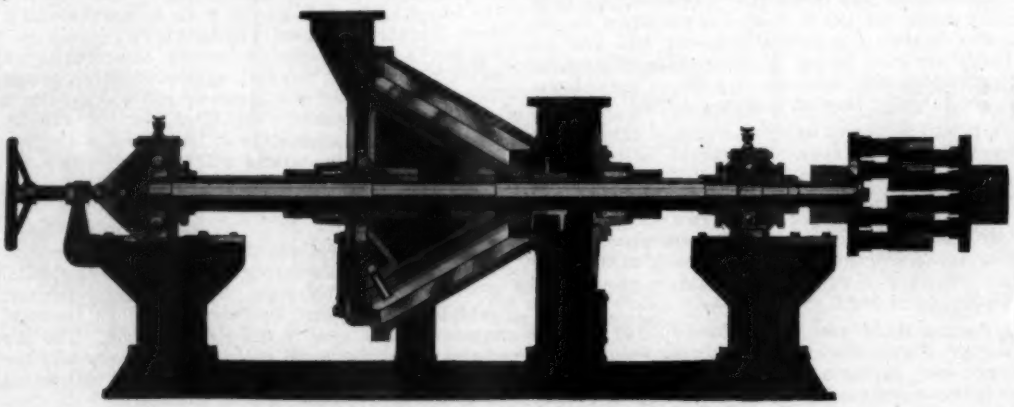
IT'S NEVER TOO EARLY TO CLAFLINIZE

EVERY noteworthy improvement has as its inception the idea of greater service at less cost in effort or money. In designing the new Claflin Refiners, the basic idea was to produce a refiner which would fulfill every beating requirement, withstand the hardest use and abuse and deliver the greatest percentage of properly beaten stock to the paper machine. To say that this objective has been reached is better proven by the fact that many users say the Claflin does better beating, brushing and refining; uses less floor space and power than similar types of Refiners. In fact "Claflins can't be beat for stuff that is hard to beat."

No stock is too difficult for the Claflin to handle. The Claflin makes a continuous beating operation possible, a fact which has many distinct advantages. It is now a proven fact that the Claflin cannot be excelled for Rope Manilla, Leather Board, Sulphite Screenings, Wall Board, Kraft Paper and waste from Pulp Stones. When used on Sulphite Screenings, the waste pile is smaller and the profits bigger.

A complete unit will handle the most difficult stock direct from the cooker and prepare it for the paper machine without any necessity of regular beating machines. The pulp will be stronger, finer and more uniform. Therefore—

IT'S NEVER TOO EARLY TO CLAFLINIZE



Showing Cross-sectional View of Claflin No. 2

Claflins are built in three sizes

Write for Catalogue

HERMANN MANUFACTURING CO., Lancaster, Ohio

factors in the St. Regis Paper Company. In 1916 the St. Regis company was reorganized and Mr. Carlisle, who is also a director in the Taggart company, became president of the St. Regis Paper Company.

Union to Raise Strike Fund

The International Brotherhood of Paper Makers is raising a fund for relief among the families of those paper makers who are still out on a strike. In voting to continue the strike against the International Paper Company which has been in progress since 1921, the Brotherhood asked support of all members of the union.

At the conference which was recently held in Glens Falls, the International Paper Company reiterated its position of May 24, 1921. On that day it offered the proposition that the practice of mutual bargaining be continued, that eight hours constitute a regular day's work, emergency overtime to be paid for at regular rates; all other overtime allowances heretofore provided for day workers, either in a trade agreement, the standard pay roll or the company's rules which were in effect April 30, 1921, be continued, that is, time and a half be paid for all work done on Sunday's holidays and between 6 p. m. and 7 a. m. on week days. The International company offered to take back its former employees without prejudice, and no discrimination would be shown against strikers unless such employees have been convicted of an offense against the company or property during the strike.

The International Brotherhood refused to accept these terms and voted to continue the strike. Practically all the former employees of the International Brotherhood in this locality have sought work in other mills or in work outside the paper making trade. It is reported in Albany, headquarters of the union, that practically 50 per cent of the former employees of the International company are back at their old jobs. Some have sought employment in other paper mills, but they are no longer considered members of the union and cannot be reinstated. The executive board of the union announces that it has washed its hands of the whole affair and any further negotiations must be inaugurated by the paper company. The action on the part of the men, however, obligates the officers of the union to give undivided support to the men and any movement toward winning the strike.

The Executive Committee of the International Brotherhood will select a meeting place for the 1925 convention soon and Watertown is a strong contender for the place.

The board of directors of the Hinde and Dauch Paper Company visited the Watertown plant during the last month and announced that improvements would be made at the plant which would add to its capacity. Those in the party were President Sidney Frohman, Vice-President George Little of Xenia, Ohio; Vice-President and Treasurer R. K. Ramsey of Sandusky, Ohio; Maynard P. Murch of Cleveland, H. C. Robinson of Cleveland, W. L. Allendorf of Sandusky and William Dauch of Westminster, Ohio. The directors held a banquet in Watertown and voted to contribute $500 to the building fund of Mercy hospital, which has just finished a campaign for a new building.

No Danger of Pulp Shortage

Officials of the St. Regis Paper Company, after an inspection trip of their properties in Canada, declared that the company would never experience a shortage of pulp wood as long as it continued to manufacture paper. The district was recently opened up by the St. Regis Paper Company of Canada, which is actively identified with the Watertown company.

"A new loading station has been constructed at Godbout river which drains the St. Regis property and flows into the St. Lawrence," said one of the officials. "When this is in full operation we will be able to load 1,000 cords of pulp wood every 24 hours. The wood which is sawed into four foot lengths in the woods is taken down to the bay in regular log drives from the timber tract owned by the company and covering thousands of acres. It is then carried down a flume 8,300 feet long to the loading wharves."

The party consisted of C. B. Martin, assistant treasurer; C. T. Jewell, general manager of the company, and J. G. Norton of the Watertown Underwriters. There has been some talk of the St. Regis Paper Company of Canada building a large mill at Cap Rouge, Quebec, and information has been given out in Montreal that the work would be started this fall. Floyd L. Carlisle, president of the company, however, refuses to confirm or deny the report. The Cap Rouge site is located about five miles from the city of Quebec.

The matter of the certiorari proceedings of the Dexter Sulphite Pulp and Paper Company of Watertown and the Gould Paper Company of Lyons Falls against the board of assessors of the town of Osceola, Lewis County, to compel a review of the assessments against the two corporations, has been referred by the supreme court to a referee. The assessment of the Dexter company is $269,210, which is twice what it should be, the company claims. That of the Gould Paper Company is $417,050, which is $300,000 too high, according to the claim. The property assessed is mostly timber land.

Edward J. Johnstone, formerly of Watertown, has assumed full charge of the production and sales of rosin size east of Buffalo for the Paper Makers' Chemical Company. Mr. Johnstone has been actively identified with the paper industry since 1908 when he became associated with F. M. Williams, consulting chemist. In 1919, after leaving the naval service, he was made chief of the bureau of test and control of the Mattagami Pulp and Paper Company, Smooth Rock Falls, Ont. He has been with the Paper Makers' Chemical Company since 1922.

Mien Haw Kang, a graduate of Yale, and Yu Ming Ma, a graduate of the University of Peking, are registered at the New York State College of Forestry, at Syracuse University, for graduate work and research. They are specializing in the manufacture of pulp and paper. Mien will pay special attention to New York state hard woods and will study the DeVains new pulp process. Yu is studying the preparation of pure cellulose from particular species of woods.

Alderik Cormier, master mechanic of the Algonquin Paper Corporation plant at Ogdensburg, and Richard Sprye, assistant, have been awarded safety first buttons by the Maryland Casualty Insurance Company. The honor was given in appreciation of the efforts of the men to safeguard the mill employees. The machinery is now guarded in such a manner that it is practically impossible to become caught in any of the drive wheels.

Although all high water records for autumn were broken along the Black river and other Northern New York rivers in October, no great amount of material damage was done. Some of the mills were obliged to shut down on account of high water, but there was no property damage.

One of the worst fires in the history of Bogalusa, Louisiana, occurred the latter part of October, when the large storage room of the Bogalusa Paper Co., used for waste paper and its contents was destroyed with a loss of about $80,000. The loss was covered by insurance and did not necessitate the closing down of any of the mill as there was considerable waste paper stored in another section of the plant.

The American Engineering Co., of Philadelphia, announces that three leading paper manufacturers have purchased nine Taylor Underfeed Stokers. They are the Mead Fibre Co., of Kingsport, Tenn., the Escanaba Paper Co., of Escanaba, Mich., and the Champion Coated Paper Co., of Hamilton, Ohio.

Foote Bros. Gear & Machine Co. of Chicago has recently completed arrangements with the well known Canadian firm of Darling Bros. for the exclusive distribution of their IXL Gear Products and Speed Reducers throughout the Dominion of Canada. The home office of Darling Bros. is in Montreal and they maintain branch offices in Windsor, Toronto, Winnipeg, Halifax, Ottawa, Vancouver and Quebec.

"You Can Say Good-bye to Rust When You Paint With Bitumastic"

Many plants will be worth less next year if they don't get a new coat before winter comes

IN THE mills that set standards for efficiency and economy, the importance of proper painting is well recognized. Ordinary paint on metal surfaces will not withstand severe chemical fumes and moisture, nor will it adequately protect costly equipment against rust and corrosion. In many leading mills the standard paint is

BITUMASTIC SOLUTION

This rust-preventing paint is made specially to resist extreme temperatures, weather conditions, moisture and chemical fumes. It gives metal surfaces a brilliant black coating, sheds dust and keeps equipment clean and bright for long periods.

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Performs continuously, resisting the most rigid tests with ease

Skinner Heaters are individual compact units; they heat and ventilate and can be adapted to practically any type of air conditioning service; constructed in the floor type and the inverted type for overhead suspension. They are effective because of their simple, scientific construction. Heaters are particularly adapted for steam and vapor removal in paper mill machine and beater rooms. Their installation guarantees prevention and condensation of drippage and excessive moisture. No outside pipes or ducts are used for air distribution. Fan operated by any power available. Use live or exhaust steam at high or low pressure. They are portable and can be moved from one place to another. Completely assembled before shipment. Easy to install, most economical to operate and the maintenance cost is exceptionally low. Performance guaranteed when installed as directed by our engineers.

Skinner Heaters Are Used by These Well Known Mills

Crocker-Burbank Co., Certainteed Products Corp., International Paper Co., Mt. Vernon Strawboard Co., Terre Haute Paper Co., American Paper Products Co., Fairfield Paper Co., New York and Pennsylvania Co., Castanea Paper Co., Dresden Paper Co., J. Strange Paper Co., Auglaize Box Co., Adams Paper Co., Bulis Mfg. Co., United Paperboard Company—Installations in 12 branch mills.

Skinner Bros. Baetz Patent Heater Steam Coil Type S. C. uses live or exhaust steam at high or low pressure. Where steam is not available we furnish Skinner Bros. Patented Direct-Fired Type D. F., which burns coal, coke, wood, gas or oil.

Our trained staff of experts will advise, without obligation with Executives, Engineers, Superintendents and Managers concerning heating, ventilating and air conditioning systems for paper mills, factories, plants and buildings of every type and size.

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Sales Offices and Branches in all Principal Cities

New York City News

November 1, 1924.

Pulp Men Stage Golf Tournament

About two score members of the New York Pulp Salesmen's Golf Association took a day off on October 15, journeyed up to the Winged Foot Golf Club at Mamaroneck, N. Y., and took part in the fall tournament of the association. Play on the links was started early in the day, and after the morning round luncheon was served, and the golfers returned to spend the afternoon on the links. Dinner was served in the clubhouse in the evening, at which it was voted to make the association a permanent one and the following officers were elected: President, Russell McCandless, of the Riordon Sales Company, Ltd.; vice president, William H. Anders, of the Perkins-Goodwin Company, and secretary and treasurer, Orval Wales, of Johaneson, Wales & Sparre, Inc.

The list of prize winners in the golf play included quite a few notables in the wood pulp trade and were as follows: Louis Calder, Tom Hendry, Nils R. Johaneson, C. R. Buck, Russell McCandless, Adolf Sleicher, B. Lindell, J. W. Southard and W. H. Anders. It is planned to have spring and fall tournaments such as have been arranged in the last couple of years.

Fulling Company to Move

The Henry F. Fulling Company, one of the oldest and best known paper jobbing concerns in the New York trade, is planning to move around November 15 from its present quarters at 120-122 West Eighteenth street to 230-234 West Seventeenth street, New York, where the street floor and basement have been leased, providing almost half again as much floor space as the firm now occupies.

The Fulling business was established in 1897 by Henry F. Fulling, and was incorporated January 1, 1920, with Mr. Fulling as president, and Charles Grief as treasurer. About a year later Mr. Fulling withdrew from the concern and Mr. Grief was elected president and Eugene F. Brennan secretary and treasurer. Mr. Grief is just completing 21 years with the firm, and says the new location of the company will enable it to carry a larger stock and assist in further increasing its volume of business. The firm carries a general line of wrapping, tissue, blotting, toilet and second sheet papers, as well as towels, cardboard and twines.

Bandits Get Board Mill Payroll

Bandits took a $7,000 payroll from A. V. Lunger, paymaster for McEwan Bros.' board mill at Whippany, N. J., on October 25, while Mr. Lunger was en route to Whippany from Morristown, where he had drawn the money from a bank. Two cars followed the Lunger automobile, in which with Mr. Lunger were Dewey Lockwood, chauffeur, and Miss Alice Hagarty, a clerk, and when a lonely road was reached in the country one of the bandit cars sideswiped the paymaster's auto and forced the driver to bring the latter to a halt, whereupon five bandits jumped from the other two cars, flourished pistols and grabbed the satchel containing the money. They then tied their three victims to trees and made their getaway in the second bandit car. When Lunger and his companions had succeeded in freeing themselves and gave the alarm, the police of Edgewater, a nearby town, arrested two suspects.

Eric V. Bowater, vice-president of the Bowater Paper Company, Inc., paper merchants of 342 Madison avenue, New York, returned from Europe during the first week of October, and was accompanied by Stanley Cousins, managing director of Lord Rothemere's Imperial and Empire Paper Mill, who will visit in the United States for awhile.

Pursuant to an order of the Referee in Bankruptcy, Hollis W. Martin, trustee, of Norwood, N. Y., will sell the paper mill, water power, real estate, furnishings and equipment of the Foley Paper Mills, Inc., located in Blossvale, Oneida County, N. Y., by sealed bids which will be opened at the office of Frank L. Cubley, Potsdam, N. Y., on November 17 at 10 a. m. The property will be sold free of encumbrances, and may be inspected at any time by making application to the trustee, care of the Martin Pulp and Paper Company, Norwood, N. Y.

J. F. Auer & Co., of 200 Fifth avenue, New York, henceforth will be the exclusive selling agents for the Northampton Paper Mills, Inc., of Raubsville, Pa., a new corporation which will operate the old mill of the Lehigh Paper Mills in that town. The Auer company also handles the product of the Luzerne Paper Corporation at Hadley, N. Y., and the Bentley Paper Mills, Inc., at Freeland, Md. The Raubsville mill will run on chip board and the Hadley mill on container and chip board and specialties.

Gerhard Kjelstrup, at one time with the Craig-Becker Company in this city and more recently in charge of the wood pulp department of the E. J. Keller Company, Inc., is now associated with the Hartig Pulp Company, Inc., wood pulp importers and agents of 247 Park avenue, New York.

Firemen of half a dozen neighboring towns were called on the night of October 23 to fight a blaze which destroyed two two-story buildings and six freight cars loaded with paper stock at the board mill of the Robert Gair Company at Piermont, N. Y., a few miles up the Hudson from New York. The damage was estimated at about $80,000. The fire started shortly after 6 p. m. and for a time it threatened destruction of the entire plant.

Keller Increases Capital

The E. J. Keller Company, Inc., importers of papermakers' supplies, of 200 Fifth avenue, New York, has increased its capital from $100,000 to $250,000, notice of same being filed recently with the Secretary of State at Albany. G. H. Rady, vice-president of the company, stated that the increase constituted the turning over of a part of the corporation's surplus to its capital stock so as to give it a larger working capital.

Frank E. Dunaway, well-known in the wood pulp trade through his connections with several concerns, has opened an office at 52 Vanderbilt avenue, New York, to deal in pulp of every description, foreign and domestic. Mr. Dunaway was in business for himself once before a few years ago.

George G. Jacob, of Alexander Jacob & Co., London, among the largest exporters of papermaking rag stock to the United States in Europe, arrived in New York a few days ago for a visit here and is making his headquarters at the Commodore Hotel.

Kent Joins Kalbfleisch Corporation

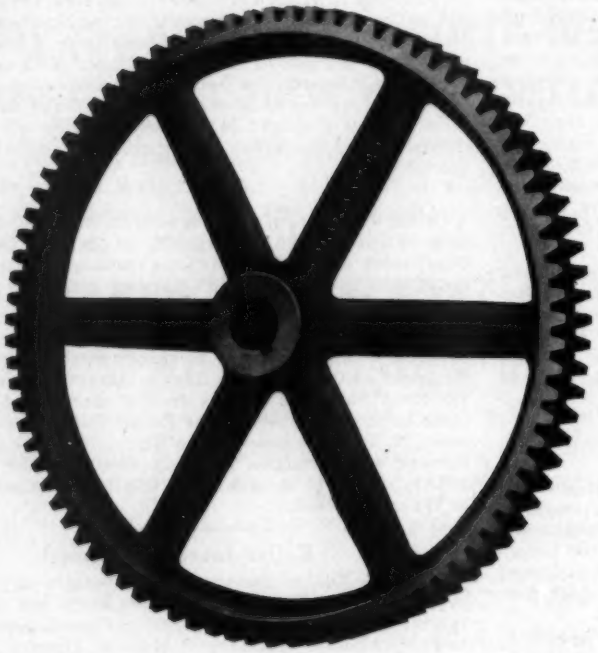
It will be of decided interest to the Paper Trade to learn that on September 30 Charles H. ("Bert") Kent has resigned as sales manager of the Paper Makers Chemical Company to join the sales force of the Kalbfleisch Corporation of New York City.

In 1917 Mr. Kent joined the forces of the Western Paper Makers Chemical Company, covering paper mills in the Kalamazoo Valley, later being transferred to the Eastern territory, and in 1920 he was made manager of that division with headquarters at Holyoke, Mass., which position he held when resigning to join the Kalbfleisch Corporation.

About a year ago the Kalbfleisch Corporation, in an effort to further serve the paper trade, entered the field for the manufacture of rosin size, which project has so extended that a new plant for its production was opened in Kalamazoo, Mich., on October 1st.

Mr. Kent's wide experience in sizing fits him most admirably to further the activities of the Kalbfleisch Corporation on rosin size as well as their other lines, for the United States and Canadian territories.

Mr. Kent is a graduate of Dartmouth, class of 1910. He will continue as a resident of Springfield, Mass., but his headquarters will be in New York City.



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Spur and Worm Gear Speed Reducing Transmissions,
Spur, Bevel, Mitre, Worm, Internal, Helical and Tractor Gears.
Rawhide and Bakelite Pinions—Racks.

D.O.JAMES

11

New England News

November 1, 1924.

Maine Mills Want Freight Rate Reduction

New England railroads again are attempting to hamstring a leading industry when they propose such unfair rate adjustments as has the Maine Central. This railroad has submitted its suggestions for revision of class rates from its lines to the socalled percentage points in Central Freight Association territory. If the Interstate Commerce Commission follows these recommendations, it will mean drastic increases for leading Maine paper mills to the great Chicago market, made the more unfavorable by preliminary reports indicating that Kalamazoo will get lower rates to the all-important Chicago market.

The matter arises in connection with the General Class rate investigation of the Interstate Commerce Commission covering class rates between New England and trunk line territory on the one hand and Central Freight Association territory on the other. In brief the Maine Central proposes to discontinue the application of Boston-Chicago rates (which are also New York-Chicago rates) between points east of Bath, Brunswick, Lewiston and Mechanic Falls, Me. At present the Boston-C. F. A. rates apply for nearly all Maine points. The increases would be proportionately as great to all other cities in C. F. A. territory whose rates are based on the well known New York-Chicago base rate.

Typical examples in the case of paper which moves sixth class would be as follows: Paper shipped from Augusta would pay 49½c per 100 lbs., carloads, against a present rate of 47½c and a proposed Boston and New York base rate of 45c; mills at Waterville, which include the important Hollingsworth & Whitney Co. group, would pay 50c; the Eastern Manufacturing Co. at Bangor would pay 52c, and the Orono Pulp & Paper Co., up the river a few miles, 53c per 100 lbs. The important newsprint mill of the St. Croix Paper Co. at Woodland, Me., would get a rate of 57c per 100 lbs., compared with 51c for their competitors at Madison, Me., and 45c for mills west of the Maine Central's arbitrary dividing points. Slight benefits would accrue to a few mills west of the points above mentioned. This would include such mills as the Androscoggin Pulp Co., the S. D. Warren Co., and the Pejepscot Paper Co., at Brunswick. But the vast majority of the paper tonnage of Maine would pay increases. The traffic managers of New England mills and the New England Paper & Pulp Traffic Association have signified their intention of fighting the thing at Washington before the Commission.

While on the subject of transportation, it is well to note that the Maine Public Utilities Commission has flatly rejected the request of the Maine Central railroad for a rehearing of the pulpwood rate case. The road is also ordered forthwith to commence refund of reparation to the paper and pulp mills on basis of new rates prescribed by the Commission.

The New England Freight Association has taken the step which many New England paper interests have long urged them to by establishing 36,000 lbs. as the carload minimum on paper as compared to 40,000 lbs. previously. The new minimum becomes effective this month, November.

Dry weather has brought about a series of forest fires in New England that have threatened valuable pulp timber. The Great Northern Paper Co., owning the most valuable stand of spruce and fir in New England, has forbid hunters to enter any part of its more than a million acres of forest in Maine unless accompanied by a registered guide. This is taken as a fire precaution and has apparently been successful in its aim. It was vociferously opposed by the always-vocal Governor of Maine, but the plan continues in effect nevertheless.

The Nashua River Paper Co. of East Pepperell, Mass., has torn down an old and obsolete mill building surrounding some of their machinery and are constructing around these machines a new and enlarged structure to cost $100,000. The new building will provide space for at least one new Fourdrinier, and it is planned to bring the machine from the company's Groton mill piecemeal and set it up at Pepperell. The plans are also understood to call for the installation of new beaters. Nashua River Paper Co. has a daily production of over 115 tons of Kraft paper daily. The improvements are expected to permit an expansion of this total. A Manchester contractor is making the changes and additions.

New England Superintendents Meet

One of the liveliest and withal the most instructive meetings ever held by the Northwestern Division of the American Pulp & Paper Mill Superintendents' Association was held at Lincoln, N. H., October 18 and 19. In addition to dancing Saturday evening at the hotel and a merry banquet, the gathering was the guest of the Parker Young Co. in a trip conducted over the company's own logging railroad up to the top of Flat Mountain to the Pond. W. S. Sommerville of the Eastern Manufacturing Co., of South Brewer, was elected chairman and K. E. Terry, superintendent of power, of the S. D. Warren Co., was elected vice chairman.

The meeting was attended by over 100 members and guests. The entertainment at Lincoln was arranged by John S. Schumaker, assistant general manager of the Parker Young Co. mills, and in addition to the trip over the company private railroad, provided interesting motor journeys to famous White Mountain resorts, including Indian Head, The Flume, Echo and Profile Lakes, Lost River and Twin Mountains.

Important business included the reduction of annual dues from $10 to $5 in line with the recommendation of the National organization. It was also voted to accept the hospitable offer of the Eastern Manufacturing Co. to hold the next meeting at Bangor, the Eastern to be host.

Regret was expressed that President Nelson R. Davis of the American Paper & Pulp Mill Superintendents' Association was unable to attend, important duties at Cumberland mills keeping him away.

Association Plans Meeting

One of the most interesting meetings to be held in recent years is planned by the Boston Paper Trade Association for its annual fall gathering, which will occur this year on the evening of November 19th, at the Exchange Club, Boston. Secretary F. Bendil Tracy, announces that Gerrit Fort, vice president in charge of traffic of the Boston & Maine railroad, will speak on the Transportation Problems of Paper, while an especial treat is to follow in the form of Ralph R. Robinson, who has accompanied Explorer McMillan on all his recent trips to the frozen north, including the latest venture. Mr. Robinson, who is a scientist as well as an explorer, will bring with him a fund of interesting stories and description, together with several dozen still pictures and a reel or two of motion pictures taken by the McMillan exploration party in 1923-1924 exploration.

Edgar B. Weeks

Mayor Edgar B. Weeks, serving his tenth term as chief executive of Old Town, Me., and land agent for the Great Northern Paper Co. for many years, died on October 14 at his home in Old Town. He was one of the oldest officials of the Great Northern and had come to them shortly after organization, bringing with him knowledge of Maine timberlands that has proved of immense value to this greatest timberland owner in New England. He was 72 years of age and had served with distinction in the Maine legislature, both House and Senate.

Loss in Hollingsworth & Vose Co.

Hollingsworth & Vose Co. suffered the loss of two valuable members of their organization within a week, in the persons of Elmer Hudson, fibre expert and member of the purchasing force, and William Williamson, chief machinist of the company's two mills. Mr. Hudson died at the Elliot Hospital in Boston, on Tuesday, September 21, at the age of 62. He had traveled extensively for the company in this country and the Philippines investigating fibres which his company might successfully use in the manufacture of their papers.

Mr. Williamson died two days after Mr. Hudson at his home in East Walpole. He had been with Hollingsworth & Vose Co. over thirty-five years and worked his way up to his position from a helper about the mill. He was considered an expert on the paper mill machinery.

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between

Cleveland
WORM GEAR REDUCTION UNITS

and other types of speed reducers

—because a Cleveland

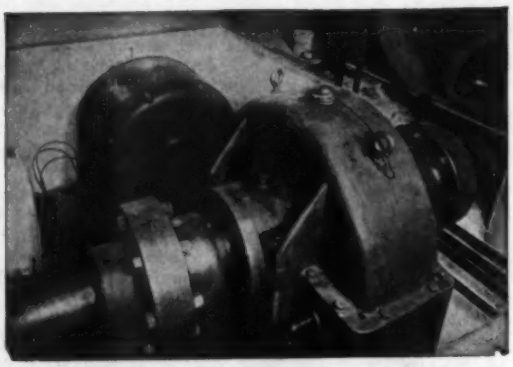
—is simple in construction
(there are only two major moving parts)

—saves space
(the right angle drive does it)

—is quiet
(runs in a bath of oil)

—is completely enclosed
(in a dust-proof, oil-tight housing)

—is easily accessible
(the case is divided horizontally)



A Single Cleveland Worm Gear Reducer Driving Mill Line and Crackers. Motor 400 H. P.—1200 R. P. M.—Speed Reduction 14 2-3 to 1

All of which means Lower Maintenance Costs—Longer Life—Higher Efficiency

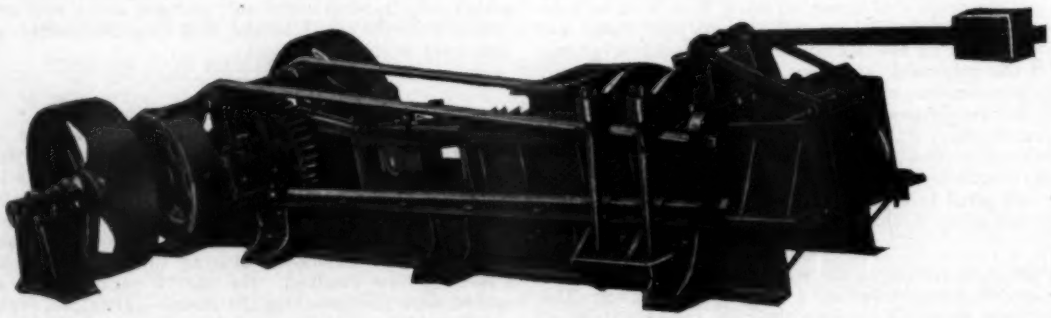
The Cleveland Worm & Gear Co.

America's Pioneers in Worm Gearing

Payne Avenue **Cleveland, O.**

Compare—then buy Clevelands

Repeat Orders Prove Success of the



Improved

GIANT NEKOOSA BARK PRESS

Prepares Bark for Fuel 52 Per Cent Dry

NEKOOSA MOTOR & MACHINE CO., Nekoosa, Wis.

Thomas Nelson Cook

A Dean of the Boston Paper Trade, Thomas Newton Cook, treasurer of Cook Vivian Co., died on October 22 at his home in Watertown, Mass. He was born in Watkins Glen, N. Y., in 1851. His first venture in the paper business was with a coarse paper house, he later opening a "Manila warehouse" of his own. His next step was with the fine paper house of Pulsifer & Jordon, which passed through several changes in personnel. Finally Mr. Cook and John Vivian became the firm of Cook Vivian Co., in 1901 and have continued as such to the present. Mr. Cook was an ardent horticulturist and an expert on roses.

Funeral services were held at All Saints Episcopal Church, Belmont, on Friday, October 24. The largest delegation from the paper trade attended that was ever seen on a similar occasion. Many mill representatives were present.

Reliable reports are received from Edmunston, N. H., to the effect that with the return of Donald Fraser from a European trip, extensive plans will be announced for the development of a big piece of property acquired, it is understood, to the Fraser Companies, Ltd., accross the St. John River in the town of Madawaska, Me. The site which has been purchased is practically opposite the property of the Fraser Companies, Canada. The plans are said to include the erection of a paper mill in Maine to be fed with raw material by an overhead pulp conveyor from the company's pulp mill in Edmunston.

O. Hodgkins & Co. suffered a fire this month to their waste paper packing plant on Dudley street, Boston. The loss was $50,000 to the building and $20,000 to stock. O. Hodgkins are among the best known New England packers of waste papers specializing in book stock and ledgers for the Fitchburg trade. The loss was entirely covered by insurance and the company will immediately rebuild. It was the first fire experienced by this concern in over 60 years of uninterrupted packing of waste paper.

James A. Harlan, formerly associated with the James J. Graham Paper Co., of Cambridge, important packers of waste paper, has branched out into a business of his own. He has leased a building at 146 Charles street, East Cambridge, where he is warehousing rags and paper, and specializing in the packing of rags for individual mill requirements. He will also deal in new paper, particularly marketmen's wrapping paper.

Col. B. A. Franklin, vice president of the Strathmore Paper Co., delivered a highly interesting address before a group of New England Business Executives at the Hotel Vendome on Thursday evening, October 23. His subject was "An Example of Planning and Budgeting for Better Management."

The Boston office of the Claremont Paper Co. and the Groveton Paper Co., formerly in the Unity Building, has been moved to large quarters in the new Chamber of Commerce Building, Boston's newest and, in many ways, her finest office structure. The company's rooms are on the sixth floor. Mr. K. H. Ways is Boston manager.

Bird & Son, Inc., have completed the construction of a new cement block foundation to their mill at Phillipsdale, R. I.

Building Paper Box Factory

To obtain the facilities of the Chicago Junction Railway, a central city location (expediting local deliveries), and a good labor market, Illinois Shipping Container Company selected and purchased a site in the Central Manufacturing District of Chicago. On this site the district trustees are building a one-story plant for the company, which the latter likewise has purchased and expect to occupy around January 1, 1925.

The land measures in area approximately 21,000 square feet. The building will cover about 13,000 square feet of that. It measures 110x165, is of brick and terra cotta front. A. Epstein, structural engineer, is designer.

The company was organized in 1920 to manufacture fibre boxes for parcel post and express shipments. The progress of the company has been rapid. It is now operating at 1302-1308 West Division Street, Chicago.

Ohio News

November 1, 1924.

To Organize Class in Papermaking

A class in papermaking will be started in Middletown by the Superintendents' Association of the Miami Valley Division of Pulp and Papermakers in co-operation with the state board for vocational education. The preliminary meeting was held in the auditorium of the Middletown Civic Building on Thursday evening, November 6, at 7:30 o'clock.

The course will be given at a nominal cost, in both correspondence and class study. The instructors in the courses are to be selected from men in the paper industry who have practical experience.

The same plan is being inaugurated with success in Cincinnati, Hamilton, West Carrollton and Dayton, as well as throughout the United States and Canada. The text books used are those prepared by the joint executive committee of the Vocational Educational Committees of the Pulp and Paper Industry of the United States and Canada.

Large Paper Mill Turbine

One of the largest turbines for installation in a United States paper mill was recently ordered by the Champion Coated Paper Company of Hamilton, Ohio. The machine is a 6,000-kilowatt, multistage, high economy condensing turbine and will operate in parallel with a 2,000-kilowatt, non-condensing machine. The turbines will be of General Electric manufacture. The back pressure governor, located in the process steam line, and operating the synchronous motor of the governor on the non-condensing machine, determines the speed setting of the governor, and, therefore, the amount of steam admitted to the turbine throttle.

A direct relation will exist between the exhaust pressure and electrical load, meaning that the 2,000-kilowatt unit will carry sufficient load at all times to furnish the exact amount of process steam required, the 6,000 kilowatt high economy turbine taking the fluctuating load.

Sandusky Foundry Changes Name

The name of the Sandusky Foundry & Machine Co., Sandusky, Ohio, has been changed to the Paper & Textile Machinery Company, that the name may more nearly reflect the company's products. No change in ownership, management or policies has been nor will be made.

The company has enjoyed a profitable business for many years and is well known to the industries served, but is constantly broadening its field and has for some time considered the action now taken.

L. T. Murphy, for five years superintendent of the Auglaize Box Board Company, has resigned to take up similar employment in Franklin, Ohio. Succeeding Mr. Murphy is W. F. McClellan, now superintendent for the American Writing Paper Company, at Windsor Lock, Conn. McClellan will arrive here about November 10.

During the week of October 13 the Wrenn Paper Company, of Middletown, displayed its various paper products at the Manufacturers' Exhibit held in Cincinnati on the roof garden of the Gibson Hotel. Arrangements for the display were formulated under the auspices of the National Association of Stationers, Office Outfitters and Manufacturers.

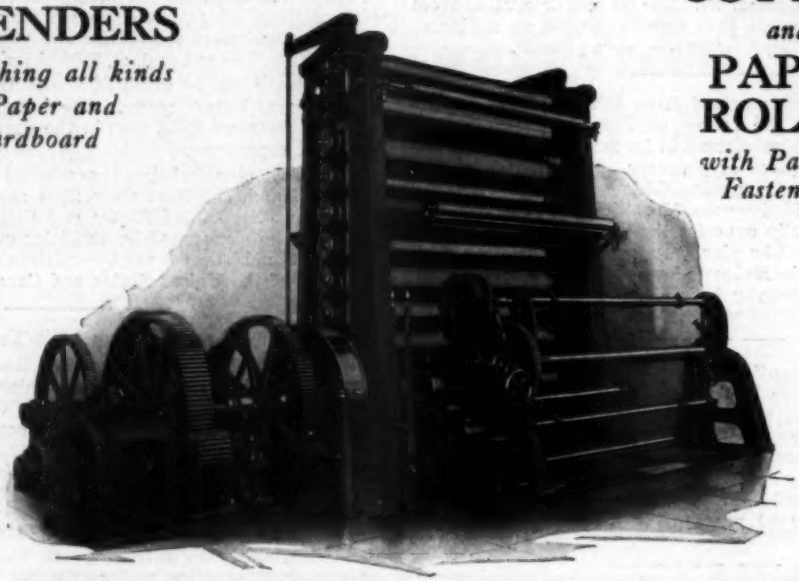
Ross Auvil, superintendent of the Crystal Paper Company, entertained at dinner October 20, at the Hotel Manchester, members of the Crystal baseball club, which won the Industrial League pennant of Middletown the past season.

Holyoke Machine Co., Holyoke, Mass.

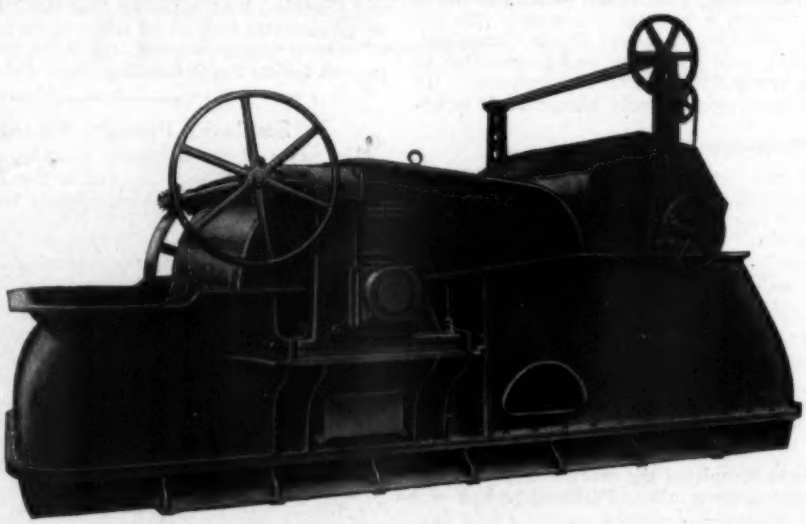
Makers of Improved Machinery for Wood Pulp and Paper Mills

LARGEST MAKERS *of*
CALENDERS
for finishing all kinds of Paper and Cardboard

COTTON
and
PAPER ROLLS
with Patented Fastenings



Finishing Machinery *for* Lithographers *and* Playing Card Manufacturers



IMPROVED BEATER OF UMPHERSTON TYPE

Wood Barkers, Wood Chippers, Wood Pulp Grinders, Rag Cutters, Rag and Paper Dusters, Washing and Beating Engines with Patent Double Hoist and Tubs of Wood or Iron. Reeling Machines and Straining Machines for Coated Paper, Hydraulic Pumps and Presses.

SPECIAL MACHINERY TO ORDER FROM ORIGINAL PLANS

Hercules Turbine Wheels with All Connections for Power Equipment

Canadian Section

November 1st, 1924.

Canada Sustains Great Loss in Death of Sir William Price

Sir William Price, head of the firm of Price Bros. & Co., Ltd., of Quebec, lost his life on Thursday, October 2, while inspecting a pulpwood pile near the Kenogami mill.

Recent floods, caused by unusually heavy rains, had undermined the banks of the river right under one of the wood piles, and unsuccessful efforts had been made to fill up the excavation with rocks and sand. Sir William Price, on learning of the unsuccessful attempts made and fearing that the lives of his men would be endangered, proceeded with A. A. MacDiarmid and H. Munroe, two of the plant engineers, to study the conditions on the spot. The three men were standing at about one hundred feet from the excavation when a landslide occurred, which hurled them into the swollen river. MacDiarmid and Munroe succeeded in reaching the shore, but Sir William was entombed alive under the rolling debris.

Diligent search was made for the body, both at the point of the accident in the Rivière Au Sable and in the Saguenay river, of which the former is a tributary; but it was found only nine days later in the Saguenay river near St. Fulgence, about fifteen miles from where the landslide occurred and about five miles below Chicoutimi.

Burial took place at Kenogami on October 13, and on the same day a memorial service was held in the Cathedral of the Holy Trinity, Quebec.

The accident has caused great consternation throughout the country, and general sorrow is felt at what is realized to be a very serious and widefelt loss, for the country in general and for the pulp and paper industry in particular.

Lieut.-Col. Sir William Price was known throughout the Dominion as one of the most prominent figures in the pulp and paper industry, being the president of Price Bros. & Co., Ltd., the fourth largest newsprint manufacturers in the world. He was the active head of a company controlled by the same family for a hundred years, a company possessing vast timber limits in northern Quebec, and, through its employment of several thousand men, exercising a powerful influence upon the industrial life of the province. He was also interested in a number of other businesses, as evidenced by the fact that he was honorary president of the Union Bank of Canada, president of the A. Gravel Lumber Company, president of the Metis Lumber Company, president of Charles Walmsley & Co. (Canada), Ltd., a director of the Wayagamack Pulp & Paper Company and of the Canadian Export Paper Company, Ltd., vice-president of the Quebec Development Company, Ltd., a director of the Montreal Trust Company, the Canadian General Electric Company, Ltd., the Timber Limit Owners' Association, the Quebec Railway, Light, Heat & Power Company, the Prudential Trust Company, the Dominion Forestry Association and other concerns.

Premier Taschereau paid a fine tribute, which shows how highly he was esteemed by the French-Canadians with whom he came in touch continually, and who appreciated his sterling qualities: "Sir William Price died at work while striving, in company with his engineers, to overcome a new difficulty and prevent harm from befalling his men. Tragic as was his death, it illustrates the manner in which he always wanted to make himself useful and to be among the first to face any obstacle that had to be encountered. Instead of making it his chief business to find a comfortable place for himself, his ambition was, as it seems, to do his duty twice over.

"The Province of Quebec is losing a big, powerful man, a true captain of industry. When the history of our time comes to be written, Sir William will stand among the most able and worthy pioneers of Canada. He constituted a great economic force in the service of our country.

"Sir William Price aimed high and looked straight ahead. He was imbued with a great trust in the future of our province and he took a deep interest in young men. He was constitutionally unable to rest, and with him the idle and selfish found little sympathy. The kindest and most generous of men, he did an immense amount of practical charitable work and he showed more than once that public spirit animated him in a very high degree. He was loved from the top to the bottom of the social ladder, and his untimely disappearance will cause as much grief among French Canadians as among those nearest to him.

"He leaves his sons to continue his work, and the men they promise to be speaks highly for the man Sir William Price was."

Although his business during the wartime called for a great deal of attention, and despite the fact that he was nearly fifty years of age, Sir William recruited a forestry battalion for service and took it to England. When the battalion was broken up, Sir William, anxious to get to the fighting line, gave up his rank of lieutenant-colonel and joined a railway construction battalion as captain.

Memorial for Sir William Price

A monument to Sir William Price will be erected at Kenogami, where his remains are now buried, but it will take the form of a national tribute to the deceased lumber king, and will be erected by contributions of all the residents of that district instead of a family memorial. The Provincial Government, it is expected, will also contribute towards the memorial.

No Change in Price Bros.' Policies

At a largely attended meeting of the board of directors of the firm, held on October 14, at the head office of the company in Quebec city, Major John H. Price, eldest son of the late Sir William Price, was elected to the board to fill the vacancy caused by the death of his father and was subsequently elected president, the position which was formerly held by Sir William. In a brief statement to the press, the new president said that his whole purpose is to carry out the policy and programme so well defined by his father, with whom he had been closely associated in business since his return from overseas shortly after the armistice.

Major Price married Miss Lorna MacDougall, daughter of Hartland B. MacDougall, of Montreal, just a few days before the catastrophe at Kenogami, and he had just arrived in England on his honeymoon at the time of Sir William's death.

Kenogami Mill Shuts Down

So as not to endanger unnecessarily the lives of hundreds of men employed in the Price Brothers' mills at Kenogami, Quebec, orders were recently issued by the company to shut down the plant for awhile.

Contract Newsprint at $70 for 1925

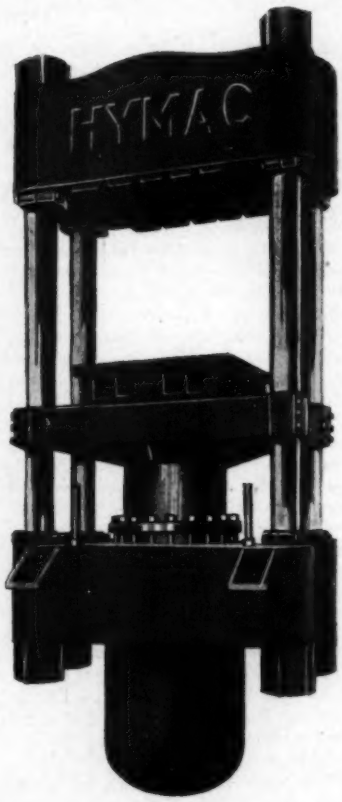
International Paper has officially announced that, effective January 1, 1925, and continuing throughout the year, the price of standard roll newsprint to its contract customers in the United States would be $70 a ton, f. o. b. mill. J. L. Fearing, sales manager, explained the announcement was made earlier than usual to comply with requests from many customers who wished to know their costs as far in advance as possible.

It is reported that Belgo-Canadian Paper has also reduced the price for 1925 contracts to the same figure, but the rumor has not yet been confirmed. Donnacona Paper, which sells its entire output to the Hearst publications in New York, is understood to have contracted for $70 a ton.

Other large Canadian producers such as Price Bros., Laurentide, Spanish River and Abitibi, have not yet made any announcement. It is true that most of them are running about 15 per cent below capacity; but with the Australian prefer-

"SULPHITE AND PAPER BALERS"

500 TON DRIED SULPHITE BALER



THE Illustration shows the HYMAC STANDARD BALER for Dried Sulphite that has come over a drying machine and been cut into sheets. By the use of this press one long ton can be compressed to less than 50 cubic feet.

Pressing surface is to suit customers' requirements.

We provide a special truck upon which sheets are piled and pressed. There is only one handling from dryer to car.

PAPER BALER

WE build a large variety of PAPER BALING PRESSES in sizes and styles to suit purchasers' requirements—Hydraulic or Power driven—Our range of patterns is so large that practically any pressing surface, stroke and full opening can be promptly provided.

THE HYDRAULIC MACHINERY CO., LIMITED

MONTREAL, CANADA

ence assured and a fair outlook for a substantial increase in exports to England, it is doubtful if the large Canadian producers will tie themselves down to $70 a ton for the whole of 1925.

Canadian Export Paper Secures Big English Contract

The Canadian Export Paper Company, Montreal, is looking forward to a new field opening up in England as a market for Canadian newsprint. This company is sales representative of Price Bros. & Co., Laurentide Company and Brompton Pulp & Paper Company. W. G. Linehan has been sent over as its representative to reorganize the London office and establish a permanent sales agency there.

Price Bros. have secured a contract from the London *Daily Express* for the shipment of 15,000 tons of newsprint per annum, equivalent to a production of 50 tons a day, and representing a cost of over one million dollars a year. This contract was entered into during the recent visit to Canada of Lord Beaverbrook, proprietor of the *Express*.

This order means a distinct gain, for very little newsprint has gone to England during the past two years. It is anticipated that contracts can be arranged also for Laurentide and Brompton.

Beck Optimistic Over English Market

Edward Beck, manager and secretary of the Canadian Pulp & Paper Association, who returned from the Wembley Exhibition a short time ago, considers that England should prove a very important factor in the newsprint situation as far as it concerns Canadian mills. He stated that, "In spite of the fact several English newsprint mills are increasing their output, everyone feels confident that the English market can absorb a great deal more newsprint than can be produced there, and there is a market for Canadian paper on competitive conditions."

The MacLeod Pulp Company's mill at Rapid Falls, after having been closed for some time through lack of water and need of repairs which are usually carried out in the dry season, has resumed operations. The company's other mill at Cowie's Falls started last Tuesday. The recent heavy rains raised a good head of water, unusually high for this time of the year, which enables these mills to operate earlier than usual. It is understood the Tidewater Paper Mills, of New York, are again buying the MacLeod company's product.

Norman Dam Control

By the terms of an agreement understood to have been tentatively approved and to be on the point of being signed by the Dominion Government and E. W. Backus, the Minneapolis pulp and paper magnate, the regulation of the flow of the Winnipeg river is to be under the control of a board, on which will be representatives of the Federal and provincial governments, instead of Mr. Backus.

The proposed new agreement comes after lengthy discussions between Mr. Backus and the Federal and the two interested provincial governments over control. The Norman dam, which was in a bad state of repair, was to be replaced, and, though the Federal Government's lowest tender on the work of reconstruction was $800,000, Mr. Backus said he would build the dam for that money and put in his development work as well.

The exact terms of the agreement have not been disclosed, but it is understood that no new franchises were granted to Mr. Backus and that important concessions were made by him.

During September the Laurentide Company's machines averaged 354 tons of newsprint daily. The average for the first nine months of the year was 364 tons daily. The rated capacity of the plant is about 375 tons. The mill is now running at full capacity.

Australia Extends British Preference to Canadian Newsprint

It was announced in these columns last month that the much talked of trade agreement between Canada and Australia had gone through, subject to approval of the Parliaments of the two countries; but at the time of writing no details were available as to the items covered.

It has since been announced that, as was confidently expected by all concerned, Canadian newsprint will be admitted into Australia duty free, on the same footing as English newsprint, as compared with the present rate of $15 a ton. The British preference is also extended to include printing paper in rolls and writing and typewriter paper. The treaty will come into effect by proclamation on a date to be decided upon by the two governments.

It is hard to tell just to what extent the new arrangement will benefit the Canadian newsprint industry; but it is believed that it will open up a market for some 30,000 to 40,000 tons of newsprint a year. This will be a clear gain to the Canadian mills, which, through the extension of a preference of $15 to British mills two years ago, in which the Canadians were not included, were shut out of the Australian market.

International to Enlarge Three-Rivers Mill

For some time past it has been known that International Paper intended expanding in Canada to compensate for the closing of some of their mills in New York, but it had not been decided whether the present mill in Three-Rivers would be enlarged or whether a new mill would be erected at Batiscan, Quebec.

It has been announced and confirmed that the Three-Rivers mill will be expanded by addition of three new newsprint machines, which will bring the capacity up to 600 tons per day and will make it the largest combined pulp and paper mill in the world. The enlargement of the plant will involve an expenditure of nearly $5,000,000, and about 300 more men will be employed.

Philippe Bigue, K. C., representing the International Paper Co., met the Three-Rivers city council and the following conditions were arranged: For a period of twenty years, from January 1, 1925, the International Paper Co. will pay taxes on a valuation not exceeding $6,000,000; the city will close Hemlock and Commissioner streets; the company assumes all responsibility following costs of damages resulting from the closing of the streets; the company will bear the expense of having the agreement ratified by the Quebec Legislature.

Work is to be started without delay, and it is hoped it will be completed about October, 1925.

H. Reeve Angel, of H. Reeve Angel & Co., Ltd., London, England, was the guest of honor at the Montreal Paper Club's opening luncheon on October 14. Mr. Angel is one of the largest paper importers in England, his firm handling the entire output of the largest Finnish paper producers as well as other continental and Scandinavian mills. The company maintains branches in Manchester, New York and New Orleans, and is now seeking connections with the paper producers of the Dominion.

Congratulations to George Carruthers

Many friends in the paper trade extended their congratulations on September 29 to George Carruthers, president of the Interlake Tissue Mills, who celebrated his fifty-fifth birthday.

Mr. Carruthers is president of the Canadian Pulp and Paper Association and some thirteen years ago organized the Interlake Tissue Mills, at the head of which he has been ever since. He is also chairman of the International Committee on Text Books for the pulp and paper industry of Canada and the United States, and he has always taken an interest in technical education and safety work in the pulp and paper mills of the Dominion.

New Company Takes Over Belleville Mills

The Hastings Paper Mills is a new company formed to take over the old Belleville Paper Mills at Belleville, Ontario. The new company announce that they have made arrangements with the mortgagee of the property lately occupied by the Belleville Paper Company to operate the plant. The company manufactures straw paper and corrugated paper carpet lining.

COMBUSTION ENGINEERING CORPORATION
POWER PLANT LIMITED EQUIPMENT
HEAD OFFICE—TORONTO VANCOUVER, MONTREAL, WINNIPEG

Good Progress at Cornerbrook

Activities at the Newfoundland Power & Paper Company's zone of operations in the Humbermouth region are increasing in an effort to have the greater part of the work of construction ready before the rigorous winter weather sets in. The outlook now is that the pulp and paper mills will be ready for operation early in the new year. It is expected that the company will employ about 3,000 persons. At present there are about 5,000 employed in the construction work.

To assist in the construction of the power plant in connection with the pulp and paper mills, a party of twenty-three electrical specialists, headed by J. Y. Dick, all employees of the British Thompson-Houston Company, arrived in Quebec recently. Machinery and equipment for the new power plant at Deer Lake preceded the party and has already been shipped from England.

Matane Dredging Stopped

After three months' dredging operations in Matane harbor, under the direction of the Federal Department of Public Works, with a view to deepening the channel so as to allow vessels to enter and load their cargoes of pulpwood with greater convenience than heretofore, dredge No. 116 left the harbor in company with the tugs Busy Bee, Storm King and Monitor, and two scows, for the port of Quebec, and operations are now discontinued until next spring, when the work will again proceed.

This work is being carried out by the Federal Government, together with the Hammermill Paper Company, each party contributing $100,000 towards the cost. Considerable opposition to the measure developed when it was presented by the government at Ottawa last July, on the ground that it was promoting export of raw pulpwood from Canada and at the same time causing a loss of revenue to the Canadian National Railways.

The Hinde & Dauch paper mill girls won the semi-final game for the S. T. Mutton soft ball trophy and the city championship in Toronto, by defeating the Dunlop girls by a score of 16 to 5 early in October. Later on they also took the first game of the ladies' city play-off from the Hope ladies at Kew Gardens, with a score of 19 to 2.

Garden City Paper Mills Expanding

A deal has been consummated whereby the plant, machinery and business of the National Paper Products Co., hitherto located at Brockville, Ont., will be removed to St. Catherines and operated by the Garden City Paper Mills, Ltd. The company is putting on the market a line of public service towels that will be fully equal to those manufactured in the past at Brockville, and a far superior line of No Waste Cabinet toilet tissue, which will have new advantages not hitherto launched upon the trade in this line or similar lines of Cabinet tissues.

An energetic and very active selling campaign will be put into force to market these goods through the regular connections of the National Paper Products, it being the policy of Garden City to follow along similar lines.

H. L. Sanborn, electrical engineer of the Abitibi Power & Paper Co., Iroquois Falls, Ontario, attended the electrical convention held recently at Schenectady, N. Y. Only seven Canadian engineers were invited.

Frederick W. Diamond has resigned his position on the engineering staff of the Laurentide Company and has taken a position at Kenogami, Quebec., with Price Bros. & Co., Ltd.

Considerable Extension Planned in Newsprint Field

If plans recently announced are carried out in the near future, there is not likely to be a shortage of newsprint for some time to come, and the opening up of the Australian market to Canadian mills is not likely to have much effect on prices.

The directors of the Wayagamack Pulp & Paper Company, Ltd., have decided that the interests of this company can best be served if its business can be extended to include a newsprint mill with a daily capacity of 200 tons, with necessary groundwood mill and other accessories. With this object in view, a new company, Wayagamack News, Ltd., has been incorporated, all the capital stock of which will be owned and controlled by the parent company. Bonds to the amount of 400,000 pounds sterling and $1,500,000 are to be issued, and the directors anticipate that with these funds the new mill can be completed and put into operation by the end of 1925.

Abitibi Power & Paper is understood to have practically completed plans for adding three more newsprint machines at the big mill at Iroquois Falls, Ontario, thus raising the capacity from 500 to 800 tons a day. The mill would remain the largest single pulp and paper mill in the world, in spite of recently announced additions to the International Mill at Three-Rivers, Quebec.

The combined increase in output contemplated by Wayagamack, Abitibi, Price and International amounts to 1,200 tons a day, or 360,000 tons a year. And if the rumors concerning Smoky Falls should materialize, this would be raised to 660,000 tons a year.

William McConnell, of Blackville, has resigned his position as forest ranger with the Forest Service Branch of the Department of Lands and Mines and has accepted a position with the Bathurst Lumber Co., Ltd., as chief log scaler.

40,000 Square Mile Pulpwood Area Offered for Sale

Practically all the pulpwood area in the province of Manitoba, an immense tract of land including more than 1,100 townships, or 40,000 square miles, is being advertised for sale by the Dominion Lands Department. The purchaser will be entitled to select within five years tracts containing not more than 3,000,000 cords of spruce pulpwood from within this area, and will be required to commence his selection within one year. He is to erect a pulp and paper mill costing not less than $2,000,000.

What has brought about the sale is J. D. McArthur's plans for a big paper mill, but the public sale will give opportunity to any bidder, and the highest will be accepted.

A. P. Costigane, secretary-engineer of the Ontario Pulp and Paper Makers' Safety Association, has returned to Toronto after a two months' combined business and pleasure trip to the British Isles.

Several Paulson Barking Drums on Order

The Canadian Ingersoll-Rand Co., Ltd., have under contract the following barking drums for installation in Canada:

E. B. Eddy Co., Ltd., Hull, Quebec, two 12x30-foot two-section drums, for installation in their new sulphite mill, and two 10x30-foot single-section drums for installation in the groundwood mill.

For Price Bros. & Co., Ltd., one 10x30-foot single-section drum for installation at Kenogami, and three 10x30-foot single-section drums for their new mill at St. Joseph d'Alma.

These drums are all the well-known Paulson patented type operating on trunnion rollers.

Work at Grande Décharge Ahead of Schedule

Engineers report that the works conducted at the Grande Décharge by the Quebec Development Company probably will have reached the first stage of development, which is to result in the harnessing of some 300,000 horsepower through utilizing Lake St. John outflow by the end of next year. This is three years after the enterprise was started and two years before the estimate of the experts.

If plans are carried out as originally intended by the Price and Duke interests, the development will go on for several more years, however, before the 500,000 horsepower easily available, and then the full 1,000,000 horsepower can be offered either locally or over the border, as it is rumored.

R. J. Blair, who has been pathologist at the Forest Product Laboratories of Canada since this line of work was established in 1915, has resigned from his position in order to engage in farming at Ormstown, Quebec.

Another New Mill Rumored for N. B.

A group of Massachusetts and New York pulp and paper men are reported to be negotiating for a site on which to construct a pulp mill at the mouth of the Mispee River, Bay of Fundy. The promoters contend that sufficient hydro-electric power can be developed from Mispee Falls to operate a large-sized pulp mill at less than 25 per cent of the cost of steam power. The chief difficulty, that of lack of rail connection, can be overcome by shipping all the pulp by water.

Mispee harbor is free of ice all through the year, as are practically all Bay of Fundy harbors, on account of the exceptionally high tides. The new mill would be in the heart of a densely wooded territory.

J. E. Patterson, paper mill superintendent at Iroquois Falls, was operated on for his nose and throat some time ago. The operation was entirely successful.

Whalen Outlook Brightening

The three mills of the Whalen Pulp and Paper Co. are now being operated. The Swanson Bay mill is turning out lumber, the Port Alice mill has been going at capacity since July 1st, while the third plant has been operating steadily. It is stated that the product of all the mills is sold up to the first of the year.

Whalen is at present being operated by a receiver, while an attempt to straighten out its finances is being made. The special committee of the debenture holders, who are endeavoring to work out a plan for the refinancing of the company, are keeping in view the advantage of the construction of a newsprint mill, to provide a market for some of the company's pulp production. At a meeting of the company a report on the properties was given by Alexander MacLaren, of Buckingham, Quebec, who spent several weeks at the company's mills in British Columbia. It is understood that the management of the company, which has been under criticism at various times for some years past, was also referred to at this meeting.

It was reported that a large quantity of lumber had been cut and left lying in the woods for nearly a year, but lately steps have been taken to use this in the manufacture of pulp.

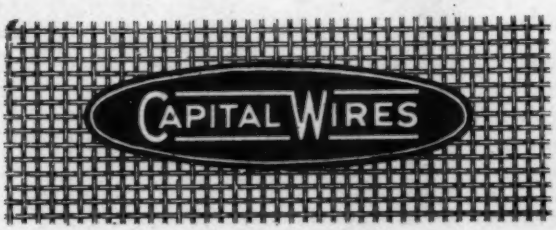
A special committee consisting of Hon. T. W. McGarry, K. C., Alexander MacLaren and T. F. Cole, has been appointed to deal with plans for reorganization, and the question of the sale of the properties, and also to meet the first mortgage bondholders and discuss these questions with them. The opinion was expressed that if new capital could be interested to the extent necessary to commence the addition of a newsprint mill, the company could pull through and be made a success.

Paper Sales, Limited, Toronto, have been appointed Canadian selling agents for Chardell papers, which are used for gift boxes, novelty boxes, etc., and are manufactured by the Paper City Manufacturing Company, Holyoke, Mass.

Paper Mill Wire Cloth of Every Description

Cylinder Covers in Brass and Phosphor Bronze

ALL MESHES *PROMPT SERVICE*



CAPITAL WIRE CLOTH & MANUFACTURING CO., LTD.
OTTAWA, CANADA

China Clay in New Ontario

C. M. McCarthy, a Toronto diamond driller and prospector, staked in 1917 what he calls two China clay claims on the Metagami river, six miles north of Smoky Falls, 24 miles from the end of the T. & N. O. Railway above Cochrane. Proof of the large amount present is given by the fact Mr. McCarthy has drilled down in 200 feet of it in a block of 80 acres and he hasn't hit the bottom yet. The two claims are estimated to contain about 40,000,000 tons.

The clay has lately been tested at Georgetown by the Georgetown Coated Paper Company, and tests are also being made in England and in the United States. The clay analyzes from 52 to 54 per cent silica, about 30 per cent alumina, 1.13 per cent iron oxide, a slight trace of lime and of magnesia, and a fair amount of moisture.

A charter has been granted to Gray Bros., Ltd., of Perth, Ontario, to buy, sell, and deal in timber berths, pulpwood, etc. The authorized capital is $100,000. Among the incorporators are H. R. Gray, of Perth, and A. H. Gray and John T. Gray, of Clyde Forks, Ont.

Commerce Again Skims Cream of Government Help

J. B. Challies, director of water power and reclamation in the Department of the Interior, has accepted an important professional position with the Shawinigan Water and Power Company. He has been director of water power since 1919 and chief engineer of the Hydrometric Survey of Canada since 1918, and director of reclamation since 1923.

The Shawinigan Water and Power Company supplies electric energy to several of the large paper mills in the St. Maurice Valley.

The weekly classes held at Iroquois Falls in connection with the course of study in the manufacture of pulp and paper have been resumed for the coming fall and winter.

Sheet Harbor Mill Progressing

Work is rapidly proceeding on the new pulp mill of the Albany Perforated Wrapping Paper Co., at Sheet Harbor, N. S. About 250 men are employed by the Parson-Ed Co., contractors. Ralph E. Jones, of New York, the company's representative, is supervising the operations. The mill will be operated by Provincial Hydro from the Ruth Falls plant on the East River.

All the electrical equipment was purchased from the Canadian Electric Co., of Peterboro, Ont. The barking system was furnished by the Canadian Allis-Chalmers Co., of Toronto. The grinders came from the Engineering and Machine Works of Canada, at St. Catharines, Ont. The hydraulic presses were made by the Hydraulic Machine Co., of Montreal. The wet machine presses and the miscellaneous pulp machinery were purchased from the Port Arthur Ship Building Co., at Port Arthur, Ont.

The output will be 75 to 80 tons daily.

At the annual meeting of the Board of Trade of Northern Ontario, which was held at Iroquois Falls, Alec Dewar, editor of the "Broke Hustler," the official weekly publication of the Abitibi Power and Paper Co., Iroquois Falls, was elected president, and B. L. Cope of Smooth Rock Falls, vice-president.

Winter Quarters for Ontario's Air Fleet

Plans have been approved and part of the contracts let for construction of a new fireproof airdrome for the Ontario provincial forestry fire patrol service. The new building is to be located at Sault Ste. Marie and will provide accommodation for five planes assembled and fifteen disassembled.

The hangar, which is expected to cost in the neighborhood of $110,000, will have an area of 80 feet by 350 feet, with a platform of 150 feet by 200 feet, which will extend into the water and will be built of steel and tile.

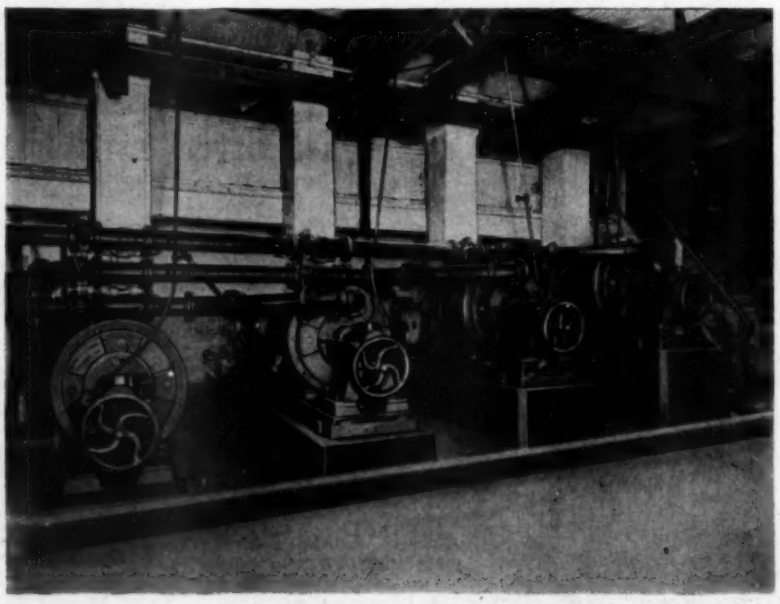
When Mills Think of Jordans They Instinctively Think of Noble & Wood Jordans—

Because:

We are builders of six sizes of standard machines with many special Jordans for particular service.

Jordans for light or heavy service, Precision Jordans, roofing rag stock Jordans, Jordans with the finest and most approved type of anti-friction bearings.

If you have any stock requiring Jordan refinement, we have the Jordan for your stock.



NOBLE & WOOD MACHINE CO., Hoosick Falls, N. Y., U. S. A.

Canadian Builders: Port Arthur Shipbuilding Co., Ltd.,
PORT ARTHUR, ONTARIO

Laurentide's Progressive Forestry Policy

Laurentide is exporting to the United States some very large shipments of spruce seed. The Keene Forestry Associates have purchased a shipment for their nurseries in New Hampshire and this has gone forward. Seed gathering and distribution is becoming one of the activities of the Forestry Division of Laurentide.

Up to the beginning of last month approximately fifteen million logs, from twelve to sixteen feet long, had been sorted at the gap maintained at the Little Piles, two miles above Grand' Mère. Of these about four million stayed at Grand' Mère and the other twelve million floated down to the mills in Shawinigan Falls and Three-Rivers. There are roughly over a hundred and thirty thousand cords in the Laurentide log pile.

Planting of young trees in the area recently acquired by the Laurentide Company in the vicinity of Lac à la Tortue is being pushed forward at a rapid pace this fall. A large body of men is employed in the work, and more than a hundred thousand trees a day are being placed in the ground. The trees being planted are from the nurseries at Proulx. They are almost exclusively spruce and average about ten to twelve inches above the soil. It is hoped to put in over three million this fall, and the remainder of six million will be planted next spring.

A new tree planting device has been developed by the Laurentide Forestry Division, which permits of the tree being placed in the ground without injury to the roots and without their being cramped in an undesirable position. One man averages two to three trees per minute with this device.

The Canadian Realty Company, of Fredericton, N. B., will be tided over through a new contract entered into with the International Paper Company, which is understood to call for the shipping of 10,000 cords of pulpwood within the next two or three months. All of this amount, with the exception of two or three thousand cords, is now available for shipment, and with little demand otherwise the remainder can be profitably secured. What will be done following completion of this contract is still uncertain.

Pulp and Paper Workers Hold Successful Convention

The International Brotherhood of Pulp, Sulphite and Paper Mill Workers of America recently concluded a successful three days' convention at the Mount Royal Hotel, Montreal. Some fifty delegates, representing 10,000 workers, were in attendance, with President John B. Burke in the chair. Owing to the rapid development of the industry in Canada, its increasing importance and the growing number of workers employed, it has become advisable, as well as necessary, to open a branch office in the Dominion. This will be located either at Montreal or at Three-Rivers. A Canadian representative of the brotherhood will be in charge.

A compliment was paid to the Canadian members in the election of two of their number to the International Executive Board. Maurice Labelle, of Ottawa, was made third vice-president, and Alexander Gibson, of Port Arthur, sixth vice-president.

Hammermill Wins $48,000 Suit

On October 28, Mr. Justice Duclos, in the Superior Court at Montreal, condemned the Matane Lumber & Development Company to pay $47,911.15 to the Hammermill Paper Company as the value, with interest, of logs, ties and pulpwood which were not delivered to the plaintiff company, though bought and paid for under a general deed of sale. The suit arose from the sale in September, 1920, of practically all of the assets of the defendant company to the plaintiff company. The latter declared that a quantity of logs, ties and pulpwood guaranteed by the contract of sale with the Matane Lumber & Development Company had not been delivered, though paid for. The defendant pleaded that the plaintiff company had negligently failed to measure the logs in accordance with the contract, and that if the wood had been properly measured the required quantity would have been found.

Barnjum to Leave Canada

Frank J. Barnjum, the leader in the movement for an absolute embargo on pulpwood, has announced in a letter to the press that, in consequence of the non-success of the movement, he has come to the conclusion that the cause of forest conservation in Canada might as well be abandoned. He intends, therefore, to offer every acre of land he owns in Canada, together with his pulp mills and other property, and leave the Dominion, as he has no desire to live "in a treeless country." He adds a warning to the people about the way the forests are being exploited, and says, "Small as the supply of timber in the United States is, it is vastly in excess of the remaining stand in Canada."

The Lake Superior Paper Company, Sault Ste. Marie, Ont., will pay school taxes in that city for 1925 on an assessment of $100,000 instead of being included under the specific tax of $7,500 along with the Lake Superior Corporation, the Great Lakes Power Company and the Algoma Central Railway. The agreement with the city provides that the taxes are to be divided among the high, public and separate schools. Based on last year's school rates, the paper mill will pay about $2,500 in taxes for the next seven years.

To Investigate Steam Economy

Alfred J. T. Taylor, president of the Combustion Engineering Corporation, Ltd., of Toronto, who has been in England for some time attending the world power conference and investigating the latest developments in power plant design, has just been appointed, with Dr. Johannes Ruth and Professor Massawo Kamo, to conduct an extensive investigation throughout the pulp and paper industry of Sweden and Finland with special reference to the economical use of steam.

Mr. Taylor will devote a good deal of time to the Ruth's steam accumulator, and also to the methods used in Sweden for the drying of wood refuse, a new form of drier having recently been developed using waste gases from the boiler plant.

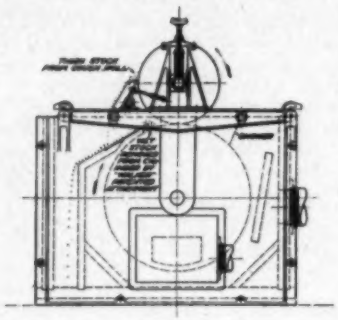
The Spruce Falls Company, who operate a 120-ton sulphite mill at Kapuskasing, Ont., are planning to harness Smoky Falls, on the Timagami river. They are having a survey made of a proposed route for the branch of the T. & N. O. Railway from the main line along the Abitibi river to Smoky Falls, a distance of over thirty miles. The suggested plan of construction is through a joint arrangement between the Spruce Falls Company and the Ontario Government.

Timber Limits in Great Demand

That several of the Canadian and United States lumber interests have still confidence in the pulp and paper industry is evidenced by the fact that Hon. Honoré Mercier, Minister of Lands and Forests for Quebec, has now before him applications from some twenty large companies suggesting that some timber limits be leased by auction. Some of the limits suggested are located in the northern section of the province, either in the Abitibi or the Chicoutimi districts. For the present the names of the applicants are not available. It is not probable, however, that large areas of timber will be sold this fall, whatever may be the request made, but some may be leased next spring.

The sales offices of Lincoln Paper Mills, Ltd., Merritton, Ont., which for some years were located on King street, near Bay street, Toronto, have been moved to 701 General Assurance Building, Bay street, Toronto, where the firm has much more commodious and convenient quarters.

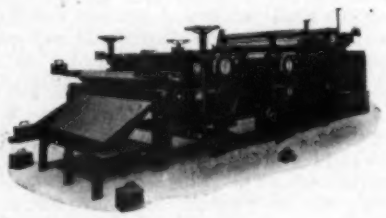
We are glad to welcome back J. N. Stephenson, editor of the Pulp and Paper Magazine, who has been away for over six months, being in charge of the Canadian Pulp and Paper Exhibit at the Wembley Exhibition. The exhibit, which was gotten up largely through his efforts, attracted widespread attention and brought forth unstinted praise from those best qualified to judge it. He is now back on the job at Gardenvale and glad of it, and is pleased to see all the old familiar faces once more.



Standard Wood Pulp Grinder

Built in Three Sizes

Taking wood 24", 30" or 32".
Bridge-trees—Are well proportioned.
Flanges—Made of steel, 40" diameter.
Hydraulic Cylinders—Copper lined, 12", 14" or 16" diameter.
Pillow Blocks—22" length of bearing.
Pockets—Very heavy and designed particularly for free discharge of pulp.
Service—Continuous distinctive service is always assured.



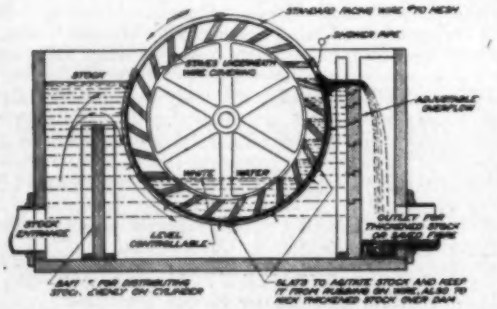
Rogers and Special Wet Machines

IMPROVED AND SIMPLIFIED
SINGLE AND DOUBLE PRESS
FOR CONVERTING CHEMICAL PULP INTO SHEETS 48% DRY

25-35 TONS air-dry pulp per 24 hours. Built in 72" width, with patented pulp weakening and separating device or our new automatic knife cut-off attachment. A real labor saver.

FREIGHT CHARGES are greatly reduced. Savings on this item alone often pay for the machine in one year.

All infringements will be vigorously prosecuted



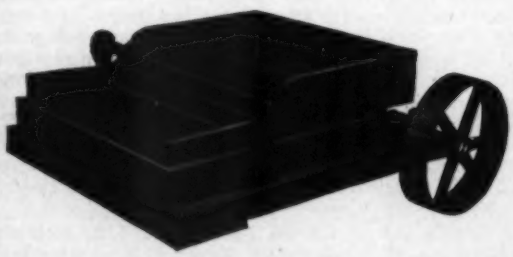
A. D. Wood Machine

Used as Pulp Thickeners, Savealls, Pulp Washers and Water Filters

ADVANTAGES:

Reduced Wire Costs	No Couch Roll
Enormous Capacity	Minimum Repairs
Only 2 H. P. Required	No Doctor
Works Automatically	Requires No Attention

OVER 150 MACHINES SOLD AND IN USE



Wells Undulating Knot and Sliver Screen

Will bear closest investigation from every angle. It separates knots and slivers from all kinds of pulp efficiently, continuously, automatically with negligible cost for operation and upkeep. Simple but rigid construction. Only best materials used. Operation in plain view.

40 TONS DAILY CAPACITY, STANDARD SIZE. WRITE FOR BLUEPRINT AND FURTHER INFORMATION

PULP AND PAPER MILL MACHINERY
GLENS FALLS MACHINE WORKS

GLENS FALLS, NEW YORK

OUR LINE IS MANUFACTURED IN CANADA BY
THE NORTHERN FOUNDRY & MACHINE CO., LTD., SAULT STE. MARIE, ONT.

Blanchard Leaves Laurentide for Newfoundland

Stanley Blanchard, at present a member of the executive staff of the Laurentide Company's groundwood mill, will join the operating organization of the Newfoundland Power & Paper Company. He will take up his new position about the first of January.

Mr. Blanchard's place at Laurentide will be taken by T. R. McLagan, who has been connected with Laurentide since 1918, when he was discharged from the C. E. F. on account of disability incurred in action in France. He returned to McGill to complete an interrupted course there and was graduated in 1923. Mr. McLagan was a member of the executive staff of the Dryden Paper Company for a time.

New Office for Horton Steel

The Horton Steel Works have opened an office in Toronto in the Federal Building, 85 Richmond street, West, in order to better serve customers in Ontario. Mr. George H. Crase, who is located at this office, has charge of sales work in Toronto and vicinity.

Mr. G. H. Sherman, general manager, will spend some of his time at the Toronto office, but for some time to come will have to give major attention to the plant at Bridgeburg, until it is working smoothly in all departments.

Greater Attendance at Forestry and Paper Making Schools

Official reports received at the Forestry Branch of the Department of Lands and Forests show a considerable increase in the number of pupils following courses at the Forest Rangers' School in Berthierville and in the Paper Making School in Three-Rivers. From ten and twenty pupils, respectively, registered last year, there are now twenty-one and thirty-one students in these two institutions.

It is also announced that plans are now before the Provincial Government providing for the utilization of some of the forest reserves owned by the Government for practical courses for the pupils interested by allowing them to exploit those limits.

Plans for reorganizing Saguenay Pulp & Power Company are now well on the way to completion, and definite announcement of the extent of the protection to be afforded to the bondholders should be made shortly. Preliminary information is such as to give assurance that the bondholders will be well satisfied with the treatment to be accorded to them.

New Power Plant for Abitibi

It is reported that a final decision has been reached by the Abitibi Power and Paper Company to go ahead with the long-discussed power plant at the Long Sault Rapids, some fourteen miles north of Cochrane and about two miles east of the bay extension of the Temiskaming and Northern Ontario Railway.

The Abitibi company has been busy on the site for some weeks getting final estimates of the cost of erecting a huge electric power plant, and the advices are that it has now definitely decided to go ahead with the plant, the cost of which may be up in the millions.

Date Set for Annual Meeting

An important meeting of the Executive Council of the Canadian Pulp & Paper Association was recently held in the association offices in Montreal. The principal business done was to select Friday, January 30, 1925, as the date for the next annual meeing, to be held in Montreal, as usual. President Carruthers, J. C. Robinson, of the Riordon Sales Corporation, and the secretary were appointed as a committee to arrange the details of the meeting, which will follow along the lines of that of last year. A resolution of regret and condolence on the death of Sir William Price was adopted and forwarded to the bereaved family.

Fred B. Zartman, manager of the Franklin Board and Paper Company, has been elected to succeed the late George Byers as a director of the Franklin National Bank, of Franklin, Ohio.

Wisconsin News

November 1, 1924.

Meeting of N. W. Division Superintendents

The annual fall meeting of the Northwestern Division of the Superintendents' Association was held at the Hotel Whiting at Stevens Point, Wisconsin, on Saturday afternoon and evening, November 1st.

Most of the mills of Wisconsin were represented by one or more superintendents, as there were over fifty members attending this session, which is a good turnout for a division that does not have an exceedingly large membership to begin with.

Chairman L. E. Smith called the meeting to order at 2 o'clock p. m. He explained that after a meeting of the executive committee it had been decided not to hold a two-day session this fall and another next spring, but just a one-day affair this fall, and to plan for a big gathering in the spring. He read a communication from the national secretary of the Association, Mr. Robert L. Eminger, urging the members of the Association to give their undivided support to the forest amendment in Wisconsin, urging that this should have the hearty co-operation of everyone to help the paper industry of that state.

Election of officers was the first order of business and the nominating committee announced their selection as follows:

Jos. H. Slater, chairman, Escanaba, Mich.
First vice-chairman, V. P. Edwardes, Appleton, Wis.
Second vice-chairman, E. P. Gleason, Port Edwards, Wis.
Third vice-president, D. B. Davies, Green Bay, Wis.
Secretary-treasurer, A. G. Stone, Marinette, Wis.

Mr. Boyce stated that Mr. Slater had accepted the nomination very reluctantly, but that he would be glad to do what he could to aid the association if it was their choice. Upon motion made and seconded a unanimous ballot was cast for the above officers for the ensuing year.

Chairman Slater expressed his willingness to do everything in his power to make the division one of the livest, and that there was a fine spirit of co-operation now existing between all of the members and that it was during such times as these when business was not as good as it might be, and competition with foreign countries so great that it was necessary for each superintendent to help the other, and that a large amount of good is gained by being members of the Association, and especially by attending the meetings.

The next order of business was a discussion of subjects relating to the different departments and classified as follows: 1, Groundwood; 2, Paper; 3, Sulphite; 4, Power and General.

Groundwood

It was brought out that the horsepower per ton needed to grind pulp varied with the kind of paper to be made, some mills using as low as 45 horsepower per ton, while others use 80 to 90, depending upon the grade of paper made. However, for mills using the same wood and making the same grade of paper there is a decided variation, and it is very necessary to keep this figure as low as possible to keep costs at a minimum.

In the grinding of wood, pond wood seemed to be preferable to seasoned wood, and grinding hot seems to give the best yield.

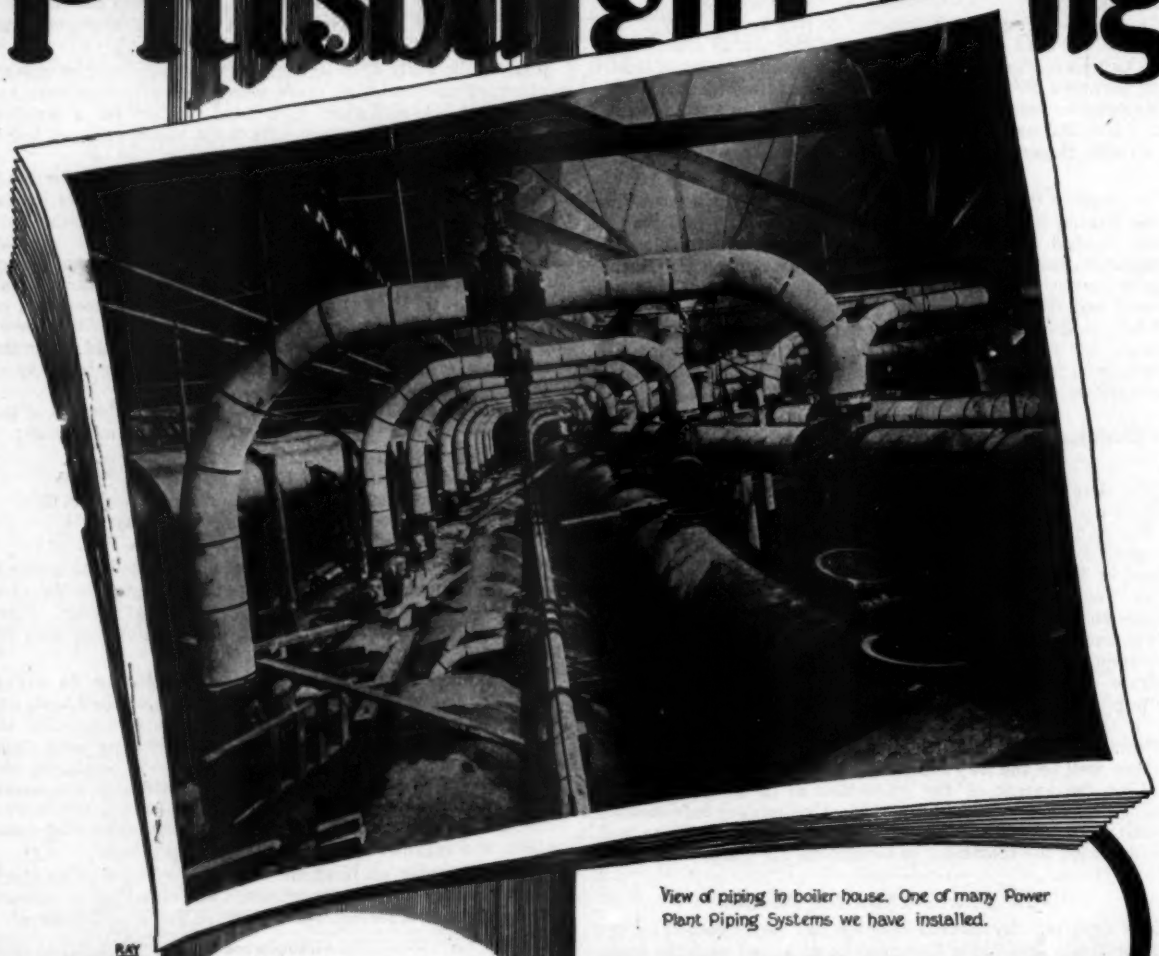
In the matter of preparing frozen groundwood for the beaters, there is a special shredder used by some of the mills for this purpose which works very satisfactorily, and this, in connection with the Allen beater, makes a fine arrangement for winter use.

Paper

The experience of those using the high slice favor it very much and it seems to be the coming thing.

In regard to keeping paper machine dryers clean on the outside, at one of the Wisconsin River Valley mills there is being used a wire brush cleaner which is working satisfactorily and keeps them polished in fine shape, thus saving steam. This is made by wires in a slotted pipe that extends across the width of the machine and will also follow the irregularities of the dryer. Doctors are also used. Those mills having trouble with oil scale in the dryer will find that the pumping of soda ash into the dryer when shut down over the

Pittsburgh Piping



View of piping in boiler house. One of many Power Plant Piping Systems we have installed.

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Specialties in Welded Wrought Steel Headers, Flanged Iron and Steel Fittings, Pipe Bends and Fabricated Piping for Power Plants.

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Sunday period will materially aid in removing the film, thus saving steam. There are a great many mills that are not bothered with this oil scale, while a few others seem to have to overcome the difficulty.

The suction couch and suction press is favored very much in all mills, and a third press is a fine thing, as more production can be obtained and a lower drying cost, both of which will decrease the total conversion cost.

Purchased size is considered more uniform than home-made size in most instances, and most of the recommendations were for bought size.

There was considerable discussion on the question of whether Kraft stock should be put through the beater or Jordan. It has been generally conceded that the best method has been to beater the stock, but a great many members now making this grade of paper were coming to favor more and more the Jordan, and if enough Jordans with the proper capacity are used an excellent sheet can be made. The power consumption of beaters and Jordans is different in each case, and many different ideas are in vogue.

The question of moisture in various grades of paper, and how to hold same, was warmly discussed. The use of the Williams tester was conceded to be one of the best ways to handle this, and highly recommended. The need of constant pressure in the dryer, and the different methods in use, shows that some systems are good for one type of service and not for another, but in order to keep the moisture uniform a new hand-regulating valve has been perfected which seems to be a very good thing and has worked out very satisfactorily by those using same.

Evening Session

The evening session was opened by a banquet at 6:30 p. m. with music by the Japanese Gardens Orchestra.

After the feast was over, Chairman Jos. H. Slater called the meeting to order and the following telegram was sent to Mr. B. T. McBain in Portland, Oregon: "The Northwest Division of Superintendents in conference here send to you collectively and individually their hearty wishes for your continued success and deem in losing you they have lost their best worker and friend." The business of the meeting was then resumed.

Sulphite

The size of chips vary for different uses, but a 1/2 to 5/8" chip seems to be the best usage. In cooking for strength it is necessary to have chips of uniform size, a good strong acid and the proper use of the steam. It was brought out that certain mills in the locality using superheated steam had been able to cut down their steam consumption considerably over the time when they use saturated steam. This point was a good one and enables those wishing to cut down this item to give it a study.

It was generally conceded that spruce gives a stronger pulp than does hemlock.

The use of hot water in blow pits helps very materially over using cold water. Considerable saving can be made, as it shortens the time of washing and also gives a better colored stock.

The use of inclined savealls for waste liquor brought out that a good deal of stock is saved by their use. Aluminum plates have been used to good advantage in mills where they have been tried.

Power and General

One of the items that makes up the largest total in the coversion cost is power.

Plants running their boilers without steam flowmeters are losing considerable money by so doing. There are a number of good flowmeters on the market and if a graphic record can be had of what is taking place in the boiler room, as well as on lines showing consumption, they will easily pay for themselves and save money. One of the best types of meters for the boiler is one that not only records the steam made, but also the air flow and temperature. Those not using such an instrument can be assured of large savings by doing so. All large central stations are using them today.

Paper mill power cost records are very important. They should be followed very closely in order that they may be cut, and a superintendent should insist on receiving them from the main office.

The use of screenings or run of mine coal, as well as Eastern or Illinois coal, is a matter of great importance. In most of the boiler rooms there are installed the old-fashioned stokers which must have a good grade of coal. Most of these mills can get by nicely with screenings during the summer months, but it is quite imperative to use run of mine coal during the winter months when the heating is on, and especially where boiler plants have to be crowded. However, in the more modern installations, screenings as well as Illinois coal can be used to good advantage.

Vocational Education

The matter of vocational education was very thoroughly discussed, and Mr. Slater called upon Mr. Gleason to give his ideas on that subject, due to the fact that the Nekoosa Edwards Paper Company had three years of it and knew something about it. Mr. Gleason stated how that after much work and effort on the part of the management and superintendents it had been put across in a rather meager way the first year, but that the second year it was quite successful and the third even more so. Different courses were offered in mathematics, steam, electricity and papermaking, and that in conjunction with the University Extension Division, which had the courses in pamphlet form, this was most successful. The teachers have been the superintendents as well as different high school and university professors, and that a large number of men, over 100 one year, had completed these different courses. It is planned to go ahead again this year, and it is expected that it will be still more of a success. It was thoroughly discussed pro and con and it was the consensus of opinion that it was necessary to teach papermakers different things, and that those who took the courses were always more quick to be put on the list for advancement. More of the mills are going to try and take this work up this year.

This concluded the discussion of the program, and after this the issue was brought up whether it would be advisable to have only one two-day meeting a year, with two or three sectional meetings. This plan received the consent of all of the members present.

The meeting was then adjourned and all of those present expressed their opinion that this was one of the best and livest meetings ever held by the division. Everyone in attendance was on his feet talking part of the time.

The date and place for the next meeting was left with the officers to decide.

Mill Down as Result of Accident

On Friday afternoon, October 3rd, there occurred a serious accident at the mill of the Grandfather Falls Paper Company, at Merrill, Wisconsin. The flywheel on the large steam engine driving the paper machine broke, causing the engine to run away, and the flywheel went through the building, causing considerable damage and necessitating a complete shutdown of the mill. The more serious part of the accident was the death of the man running the engine.

A crew of men started to work on the line shafting and making repairs, and a large motor was secured, so that in a short time the mill was again making paper.

Cleveland Worm Gear in New Plant

The Cleveland Worm & Gear Company, manufacturers of Worm Gearing for automotive purposes and Cleveland Worm Gear Speed Reducers for industrial purposes, have moved into their new plant on East 80th Street, south of Kinsman Avenue, Cleveland, Ohio. The first unit which has been erected at an approximate cost of $200,000.00 is of one-story construction, monitor type, with steel sash wall design and will have a total floor area of 45,000 square feet.

The constantly increasing business of this concern has compelled the abandonment of their present quarters at 40th Street and Payne Avenue, which they have occupied for many years. The Cleveland Worm & Gear Company have the distinction of being the pioneer manufacturers of Worm Gear Units in this country, in addition to being the only concern in the world devoting its entire resources to the exclusive manufacture of this type of speed reducer.

DUXBAK

LEATHER BELTING

efficient durable economical

an ideal belting for paper mill drives

—our series of "Quality Facts about Belting" tells you why Write for them

DUXBAK BELTING TRADE MARK

Thoroughly Waterproofed and Built for Service

Chas. A. Schieren Company ESTABLISHED 1848

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POWER TRANSMITTING MACHINERY

Collar Oiling Pillow Blocks

BY INVITATION MEMBER OF

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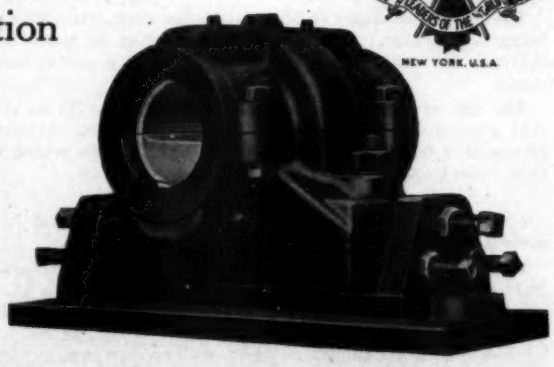
For Paper Mills, Cement Mills, Flour Mills or any Plant where Line Shaft Service is severe and Lubrication a problem



These rigid Pillow Blocks are big and strong, lined with a good grade of babbitt bored to shaft size. This insures a perfect fit and the collar oiling feature guarantees a copious supply of oil reaching the top of bearing where it is directed over the full length of shaft through specially designed oil channels.

They may be had with or without base plates

T. B. Wood's Sons Co., Chambersburg, Pa.

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Makers of Power Transmitting Machinery Exclusively and Continuously since 1857

Michigan News

November 1, 1924.

Bryant to Erect Central Machine Shop

The erection of a model machine shop and salvage plant is now being planned at the Bryant Paper Co. While it will be several months before actual construction work is underway, the details are now being worked out by Felix Pagenstecher, president of the company, and Edward Rutz, superintendent of power and maintenance.

This structure, which is part of expansion campaign No. 1, formulated by V. D. Simons, consulting industrial engineer of Chicago, is the final step in that program, which included a general consolidation of the power facilities for the Superior, Bryant and Imperial divisions into one modern power plant and the erection of a modern type of pulp mill at the Superior division, capable of converting waste book papers into raw stock, sufficient to supply the needs of the seven paper machines in the Bryant and Superior divisions.

The proposed salvage plant will be located as near as possible to the center of mill activities, thus making it accessible from all operating divisions at a minimum of time and expense. The machine shop will be of the most approved type, one feature being its ability to successfully grind rolls weighing as much as 10 tons. To handle these huge rolls, economically and speedily, a monorail system is being worked out as one of the features of this unit.

The completion of the new power plant has made possible the conversion of four structures, one time housing batteries of boilers, to other purposes. The old boilers have been torn out in most instances. At the Superior division that power unit is to be reroofed and a new concrete floor laid, and the building will be used as a paper stock warehouse. One of the power plants at the Bryant division will also be converted to storage purposes. Two other buildings will be dismantled.

The new conversion plant at the Superior division has long since passed the experimental stage. It has demonstrated that it is capable of supplying an ample quantity of high grade, well washed stock to meet all the needs of both the Superior and Bryant divisions. It is supplied direct by one sorting room and has eliminated three other similar departments, while the one giant washer does the work formerly requiring 30 washers.

The success of this conversion plant has made possible a multitude of changes in the Bryant division, consisting mostly of the abandonment of obsolete machinery, washers, cookers and rotaries. For several months gangs of men have been engaged in cleaning up and scrapping equipment.

Standard Paper Increases Equipment

Since the first of the year, the Standard Paper Co. of Kalamazoo, known throughout the trade for their high quality patent coated boards, has installed two additional 48"x54" Dayton beaters, adding to the capacity of their No. 3 machine unit, also installed an additional cylinder mold on this machine and a new Black-Clawson duplex cutter, replacing the cutter originally installed with the machine.

Further improvements include the installation of a new 504 H.P. Springfield boiler, with Foster superheater and fired with a Harrington forced draft, chain grate stoker. This is the first stoker of this type installed by any of the Michigan mills. This type stoker was selected because of its adaptability for burning low grade fuels and ease of control. The stoker was tested out with some badly air-slaked Indiana and Eastern Illinois coals which had been stored in the yard for several years, having been found almost valueless for use in other stoker equipment in the plant.

The capacity of this mill has gradually been increased through minor changes resulting in more efficient performance of the machines and improvement in drying. The improvement in the No. 2 machine resulted in productive capacity exceeding the safe speed of the engine driving the machine when operating the machine on lighter weights. New parts have been ordered and changes are being made to increase the maximum speed of this machine from the former limit of about 115 ft. per minute to 200 ft. per minute, making possible production up to the full drying capacity on calipers down to nine-point or lighter is desired.

Installation of the new boiler, together with new coal bunker and extension of coal handling equipment, and beaters have been made according to plans and specifications of B. M. Baxter & Co., who also designed alterations in machine dryer drainage and minor alterations in the paper machines which have resulted in materially increased production.

Superintendents Meet

The Michigan division of the Superintendents' Association held their regular monthly meeting for October on the 15th at the Park-American Hotel. At this meeting Allan Hoben, president of Kalamazoo College, gave a talk on American Ideals. The members present were: E. H. Gilman, Bryant Paper Co.; Jacob Parent, Western Board and Paper Co.; George Pountain, Allied Mills; Michael Redmond, Kalamazoo Paper Co.; Fred Smith, Hawthorne Paper Co.; Clarence Thorne, Watervliet Paper Co.; Jacob Kuss, Frank Johnson, Art Stolle, Allied Mills; Vern Hotelling, Watervliet Paper Co.; Alfred Bryant, Bryant Paper Co.; Glen Cathey, Goodrich Rubber Co.; Clarence Harter, Rex Paper Co.; Art Camp, Michigan Paper Co.; William Sievert, Michigan Carton Co.; Elmer East, Michigan Paper Co.; Mr. Best, Western Paper Makers Chemical Co.

Kalbfleisch Plant Starts Work Soon

The Kalbfleisch Corporation expects to be able to begin production of rosin size in its Kalamazoo plant within 30 to 60 days, according to L. R. Verdon, secretary and general manager of the Michigan corporation. Since taking over the property of the Michigan Silo Company, in Race street, many changes have been made in that structure.

Fred R. Aldrich, formerly assistant superintendent of the Kalbfleisch Corporation's plant at Erie, Pa., has been named superintendent of the Kalamazoo division. He is now on the job, assisting John F. Fraderson, New York, general superintendent, in getting the plant started. L. R. Verdon has been named secretary and general manager. He will also continue to operate the Paper Mills Supply Company, this concern to act as selling organization for the Kalbfleisch products in the West.

Gumbinsky Brothers Sued

Oscar Gumbinsky and Nathan Gumbinsky, one-time directors and officers of the Eddy Paper Company, and Oscar Gumbinsky & Bros., together with Fred C. Bristol and George W. Schultz, Chicago stock brokers, have been sued for $346,000 in the Cook County Superior Court, Chicago, by the International Lamp Corporation. This suit preceded one filed by Oscar Gumbinsky and Mr. Bristol against the lamp company for $130,000.

Charges of fraud in retaining $48,000 held in escrow as security belonging to the company, the alleged non-payment of a $155,000 balance due from the sale of 60,000 shares of stock to the public, and failure to keep an agreement to purchase stock valued at $160,000 are the principal items of the bill.

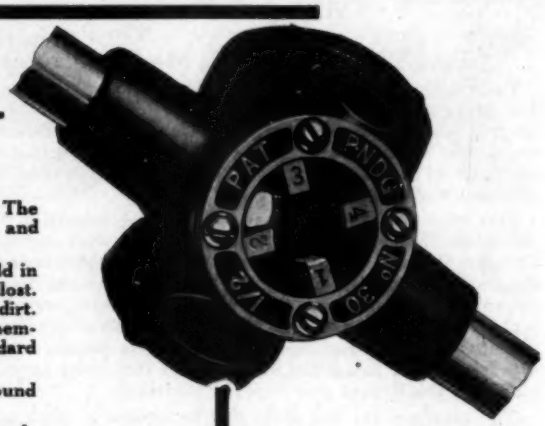
Expansion Program Planned for the Mac Sim Bar

A half-million-dollar expansion program is announced by the Mac Sim Bar Paper Co., Otsego. It will include the erection and the equipment of a new engine house, a new pumping station and the installation of a third board machine and auxiliary equipment.

Plans for the engine house have been completed by Billingham & Cobb, engineers. They provide for a one-story and basement structure 50 by 66 feet in dimensions. It will be of concrete and steel and will be located immediately west of the recently installed boiler house. It will accommodate four 750 K. W. turbines, one of which has been ordered from the General Electric Co. for immediate delivery.

This unit will occupy the ground now covered by the pump house and will result in the razing of the latter and the erection of a new pump house and reservoir on the banks of the Kalamazoo River. The pump house will be of concrete and

The "Toledo" Three-Way— for Threading Small Pipe



Here are the ideal tools for threading small pipe. The "TOLEDO" No. 30 3-way threader for ⅜", ½" and ¾" and the No. 31 for ½", ¾" and 1".

They are small, compact little tools and can be held in the palm of the hand. No extra parts to become lost. No net-like castings to become clogged with dirt. They are constructed so that chips easily clear themselves, and produce smooth perfectly tapered standard threads.

The dies are easily removed and can be reground when dull or replaced at small expense.

For threading small pipe you will find no better tools than these new "TOLEDOS."

Your jobber will quote you or a card to us will bring complete information.

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Look for and insist on this Trade Mark for Efficiency.

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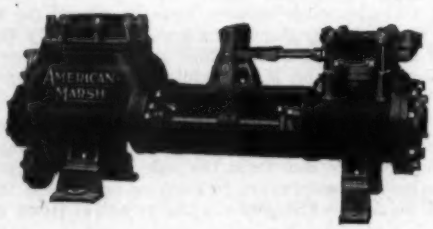
AMERICAN-MARSH PUMPS

SIMPLEX—DUPLEX—CENTRIFUGAL



ALL American-Marsh Pumps, whatever the type, are heavily constructed with the best of material and workmanship. They are the result of over 35 years' experience in the building of high grade pumping machinery. Every pump is given a thorough test under actual working conditions before shipment.

There are over 165,000 in successful operation.

The line includes:

Boiler Feed Pumps
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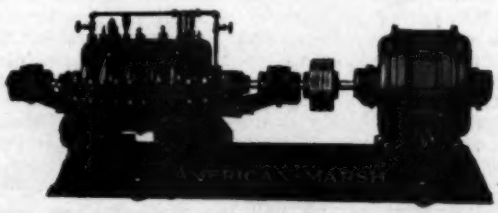

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AMERICAN STEAM PUMP COMPANY

BATTLE CREEK, MICH.

steel, 22 by 26 feet in dimensions, capable of accommodating two 5,000-gallon pumps and a fire pump. In addition there will be a 150,000-gallon reservoir, 22 by 60 feet in dimensions and 12 feet deep. Billingham & Cobb are now working out plans for the new pumping unit.

The installation of another board machine is announced through a source considered perfectly reliable. Figures are being secured on the machine and auxiliary equipment. The addition of the proposed machine will make the Mac Sim Bar plant one of the half-dozen largest board mills in the Middle West. It will probably be at least 18 months before the new machine is in operation. In connection with the expansion program announced, it is understood the Mac Sim Bar company will not have to do any additional financing.

Wax Paper Meeting

The value of real service to the public was emphasized at the quarterly meeting of the Waxed Paper Manufacturers of the United States and Canada, who were in session Tuesday, October 21st, in the Parchment community house as guests of the Kalamazoo Vegetable Parchment Company. The discussions of the day were devoted almost exclusively to the topic of how waxed paper manufacturers can serve the users of that product.

Following the business session the visitors were taken for inspection of the new K. V. P. mill. Dinner was then served.

Offers $25 Prize for Booster Paper

The person who can prepare the best paper setting forth Kalamazoo's advantages as an industrial center and as the proper location for factories will receive a prize of $25. This offer was made at the Thursday noon meeting of the Advertising Club of Kalamazoo by Jacob Kindleberger, president of the Kalamazoo Vegetable Parchment Co.

Mr. Kindleberger was billed to talk on impressions of Mexico and while he covered many features along that line, he took time to discuss local industrial growth and development.

The Rex Paper Company gave a Halloween dancing party Friday evening, October 31st, in the new addition to the mill, which 300 employees and their families attended. All came in costume and the youngest masquerader was six months old, the son of Mr. & Mrs. R. V. McCulfor, treasurer of the company.

Pacific Coast News

November 1, 1924.

Oregon Pulp and Paper's Modern Mill

After the short time of four years in active production, the huge paper mill of the Oregon Pulp and Paper Company, on the Willamette river at Salem, Ore., has proven the need for greater Pacific Coast production of high quality papers for special uses, has been proclaimed one of the most modern establishments of its kind in existence, and has assumed the leading position in industrial importance in the state's capitol city, with a population of 25,000.

Started on a conservative scale by a group of local lumbermen and financiers with the idea of making the most possible out of their scattered stands of western hemlock, this mill has been constantly in the process of enlargement in order to meet heavy demands up and down the Pacific Coast for the various special paper products it produces. These are high grade wrapping, including grease-proof glassine in natural, bleached and colors; manilas in butcher's fiber, adding machine paper, paper for explosives and cartridges, bond papers and alkali soap wrappers.

Today this plant is busy 24 hours every day, divided in three eight-hour shifts, employs nearly 500 workers, has 1,750 people of the community dependent on it for a living, carries a payroll of more than $40,000 a month, spends $32,000 a month for cord wood, uses three times as much water daily as all the rest of the community, and consumes one-third the amount of electricity required by the city.

The output of this western plant is confined to the sulphite

"It Stands Up"

REPUBLIC BELTING

A thorough understanding of paper mill conditions was responsible for the design and construction of the Republic's Double Cross Belt.

By study and experiment, Republic engineers insured its fine performance before it was sold to a single manufacturer.

On the basis of achievement, in consistently delivering power economically in paper mills the country over, we recommend it for your consideration.

The REPUBLIC RUBBER CO.
YOUNGSTOWN, OHIO

Your Fourdriniers Are Willing!

YOUR Fourdrinier Machines are willing to do the very best work of which they are capable—but you must give them encouragement.

They cannot produce the maximum of profitable output if they are equipped with Fourdrinier Wires that have nothing to recommend them but price.

Such wires soon wear loose and baggy, jeopardizing the profit-earning ability of the Fourdrinier Machine as well as the quality and reputation of your paper.

If you want your machines to make better paper and more of it, try Tyler "Quality" Fourdrinier Wires. The special composition wire used, and the firm, accurate weaving, produces a wire that runs straight and true—that assures the maximum of output from the standpoint of the Fourdrinier Wire.

Give your Fourdrinier Machines the opportunity to do their best work—a trial of Tyler Fourdrinier Wires will convince you of their value in increased output and improved quality of paper.

THE W. S. TYLER COMPANY, *Cleveland, Ohio*

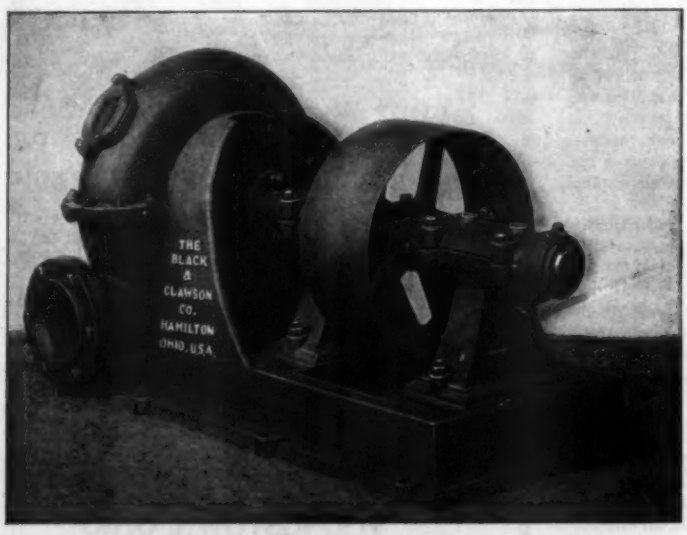
TYLER FOURDRINIER WIRES

CYLINDER WIRES BACKING WIRES WASHER WIRES CORDUROY WIRE CLOTH HUMMER ELECTRIC SCREENS

The BLACK-CLAWSON CO.

Leading Builders of Paper and Pulp Mill Machinery

Hamilton, Ohio, U. S. A.



Fan Pumps of Iron or Bronze in Sizes from 2" to 12".

ESTABLISHED 1873, and since we have steadily grown and stood forth as leaders in the manufacture of paper making machines and other equipment for every requirement in Board, Pulp and Paper Mills.

Our large plant and special equipment with skilled and trained help enable us to render efficient and prompt service and satisfaction to a customer.

The best is none too good. Let us serve you.

process. In the sulphite mill there are four 15′ x 49′ digesters of 12-ton capacity, with a Jenssen acid system.

The most modern types of machinery have been installed in this mill throughout, with new units added from time to time to provide for greater capacity or efficiency. The main mill has three Fourdrinier papermaking machines of 110-, 116- and 136-inch cylinders, respectively, with a total capacity of 65 tons in 24 hours. There are thirteen 2,000-pound beaters, two of which were added in the last year. Recent installations include a 72-inch Hamblet cutter and a brand new stack of super-calenders for glassine papers, all electrically driven. The latest beater installed is equipped with a stone roller made from German lava rock for work on grease-proof paper.

Approximately 40,000 cords of wood are consumed in paper manufacture in this mill every month. The wood room has capacity for 60,000 feet of hemlock or white fir in 8 hours. The equipment used in preparing the wood includes one electric log hoist, two 84-inch cut-off saws, two vertical type steam splitters, four hand barkers, one 88-inch chipper and two rotary chip screens.

The bleaching plant has a capacity of 35 to 40 tons and is operated by a new process recently invented in Finland. The outstanding features of this machine are three Richten tile-lined vertical tanks, or cells, with a copper tube in the center of each one, extending from the bottom to within 12 inches of the top, in each of which runs an impeller conveying the stock from the bottom of the cell to the top of the copper tube, giving complete circulation.

Water is drawn from the canal and is filtered through a 10,000,000-gallon filter system built by the California Filter Company. The fuel used is sawmill waste from the sawmill of the C. K. Spaulding Logging Company, very closely connected by an elaborate conveyor system.

The Oregon Pulp & Paper Company is headed by an organization of men who thoroughly understand the problems and demands of their special field. Major F. W. Leadbetter, president of the company, has devoted his life to operation, managing and financing paper mills. Charles K. Spaulding, vice-president, has built up a wide experience in the operation of woodworking plants on the Pacific Coast. Carl F. Beyerl, general manager of the Salem mill, is a descendant of papermaking ancestors. He received his early papermaking training in a Bohemian plant where was made the highest quality paper in the world, and saw considerable plant building and managerial service in Germany, Belgium, England and Canada before invading this western field. Other officers of the company are Walter L. Spaulding, secretary, and William S. Walton, treasurer, to whom also papermaking was no new undertaking when they joined the plant at Salem.

Seattle Offers Cheap Power

J. C. Dort, hydro-electric engineer for the United States Forest Service, who passed through Seattle during the month, declared that the States of Washington and Oregon will benefit tremendously from an early western movement of eastern manufacturers who will have to go to southeastern Alaska for their pulp timber. Dort said:

"The two national forests in Alaska can produce about 2,000,000 cords of pulpwood every year for all time under scientific forestry practice. This means an output of 5,000 tons of paper every day."

Offers of the city of Seattle of cheap power to several pulp mills were investigated by the council this month. J. D. Ross, city light superintendent, assumed responsibility for the negotiations.

"I have had negotiations with three different paper and pulp mills," Mr. Ross told the council. "All of the negotiations have been in the formative stages. All have failed to materialize because the terms offered the city or the terms offered by the city have proved unsatisfactory. The mayor and others have offered me aid in arranging the contracts. I am still negotiating with a fourth firm and may bring this to a satisfactory conclusion."

Inauguration of river transport service between Portland and Salem by the Inland Water Transportation Company is expected to open up a new rich source of supply for straw to be used in the manufacture of strawboard, a by-product being

EVEREDY SINGLE DRUM 500 LB. HOIST

$225.00

Weight 215 lbs.

Built to Defeat Wear and Tear

THOUGH low in cost, the Everedy Single Drum Portable Electric Hoist is built to master the most severe working conditions. To achieve this end we have so simplified its construction, built it so sturdily and so strong, with automatic limit stops at the bottom as well as top, and safety blow out fuse, that it will serve you without the slightest inconvenience or trouble, barring only misuse.

Light—the 500-lb. hoist weighs only 215 lbs.; the 1,000-lb. model weighs 250 lbs.; priced at $250.00. Low head room. Roller bearing equipment throughout. "Alemite" lubrication, 500 to 2,000 lbs. capacity. Suspended from the same point as an air or chain hoist. Fits any standard trolley.

Low in cost—high in quality—Investigate!

Reading Chain & Block Corp.

Reading, Pa.

Manufacturers of Everedy Portable Electric Hoists, Multiple Gear Chain Blocks and Traveling Cranes

Everedy

ELECTRIC HOIST »» *Multiplies Man Power*

READING CHAIN & BLOCK CORP., *Reading*, Pa.

Gentlemen: Below in the margin of the magazine, I have written my name, my company's name and address and conditions under which a hoist would work in our plant. What equipment would you recommend?

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Made for maximum service not merely the average

TRADE JENKINS MARK
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Every engineer knows

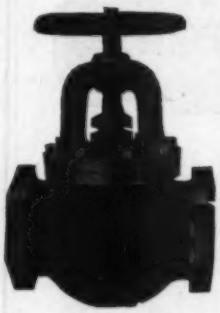

Fig. 141, screwed, Standard Iron Body Globe Valve, with yoke.

Good valves are important and necessary. The actual cost of installing genuine Jenkins Valves is no more than that of installing valves of inferior quality.

But the longer and better valve service provided by Jenkins Valves makes more emphatic the slogan "It pays to install a GOOD valve FIRST." For Jenkins Valves are recognized everywhere as an investment in satisfactory service.

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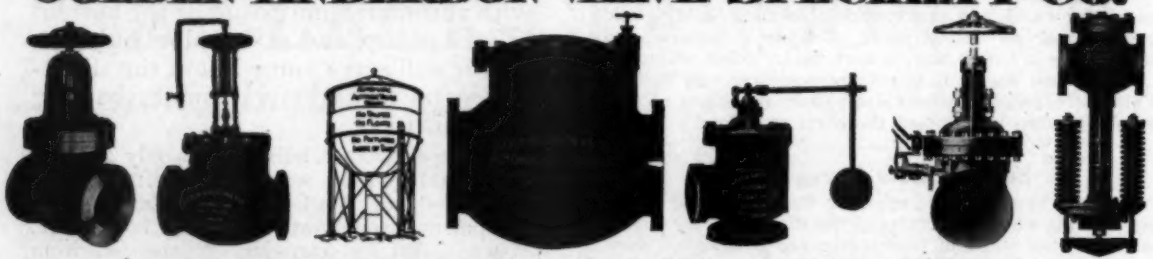

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"We Challenge to Test for Merits Any Automatic Steam or Water-Service Valves in the World"
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PURIFICATION SYSTEMS
SOFTENING & FILTRATION
FOR BOILER FEED AND
ALL INDUSTRIAL USES

WM. B. SCAIFE & SONS CO., PITTSBURGH, PA.

made by the Long-Bell Lumber Company at Longview, Wash. Assurance from the Oregon Pulp & Paper Company, of Salem, that its freight traffic to Portland would be diverted to the boats is reported to be the deciding factor in the decision to institute this service by water.

McBain Opens Office in Portland

Mr. B. T. McBain, who just recently returned to the Pacific Coast from the East, has opened up an office in Portland, Ore., Room 721, Spaulding Building, specializing in pulp and paper mill problems.

Most of Mr. McBain's experience of 25 years in the pulp and paper industry was gained on the Pacific Coast, where he was resident manager of the old Willamette Pulp & Paper Company. After its consolidation into the Crown Willamette Paper Company, he became operating manager for five years for the mills of this company at Camas, Wash., and Lebanon, Oregon City and West Linn, Ore. He later took the position of director of manufacturing at the Nekoosa Edwards Paper Company, Port Edwards and Nekoosa, Wis., which position he resigned to return to the Pacific Coast.

This experience gives Mr. McBain a thorough knowledge of the industry, and all those who solicit his services for reports on new and existing plants or management and efficiency problems will surely find him a man of exceptional ability.

Mr. McBain has been placed temporarily in charge of the Columbia River Paper Mills since the resignation of Fred H. Fuller as superintendent. Mr. Fuller has made no announcement concerning his future. We wish him success in his new enterprise.

Experimenting with New Pulp Materials

At the plant of the Oregon Pulp & Paper Company, Salem, Ore., there is being carried on some extensive experiments by Mr. Robert Thomas, a chemical engineer of considerable standing in the paper industry on the Pacific Coast.

He is working on experiments to prove by tests that other raw materials for pulp are available other than the spruce, hemlock and fir now used.

Mr. Thomas worked in the pulp and paper industry before becoming a technical man, and knows the art very well.

The Crown Willamette Pulp & Paper Company is extending its logging railway further back into the timber tract purchased a year ago from the Bradley Lumber Company and which lies near Cathlamet, in Wahkiakum county, Wash. Several miles of railway grade are now under construction. Purchases of additional nearby stands from the Weyerhaeuser Timber Company and the State have given the paper company a great volume of timber to cut.

More than seventy members of the Longview, Wash., Lions' Club were guests of the Pacific Straw Paper & Board Company, October 7, and were conducted by Charles F. Schaub, president of the company, on a tour of inspection of the company's new paper plant, construction of which is nearing completion at that city. Mr. Schaub announced the plant will commence operation late this year.

Mr. A. B. Galloway, manager of American Paper Company, of Seattle, Wash., has been visiting the pulp and paper mills in Oregon and Washington during the week of October 13. While the American Paper Company and the Mutual Paper Company, of Seattle, has agreed to consolidate, Mr. Galloway will remain with the American company until after the first of 1925.

Mr. Bert Eddy, for many years sulphite superintendent of Crown Willamette mills at Camas, Wash., and who has been ill these many months, is up and about again. He is unable yet to take up his pulp mill duties, but is well enough to mix with his many friends and sell an automobile now and then.

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Bars	Boiler Tubes
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Morse Silent Chain Drives can always be depended on for transmitting power day after day at top-notch efficiency. They are entirely reliable in operation,—all interruptions involving costly delays, idle machinery, as well as idle men,—a condition frequently experienced with other types of flat belt drives—are done away with. For this reason, Morse Drives are of vital importance wherever continuity of plant operation is essential.

Let the Morse Engineer co-operate with you in planning your next power drive.

MORSE CHAIN COMPANY, ITHACA, N. Y.

There is a Morse Engineer near you

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Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest.

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Foreign Correspondence
Paper Trade in Great Britain

Some idea of the increasing importance of the production of paper in Great Britain, and of the position it has attained in British industry may be gleaned from the fact that most of the trade journals and newspapers have special regular sections which deal simply and solely with the paper industry.

The Manchester Guardian Commercial is a paper which of late has given some attention to the matter, and that it is fully aware of the value of paper in commerce may be seen from the following leading article which appeared in the issue dated September 18:

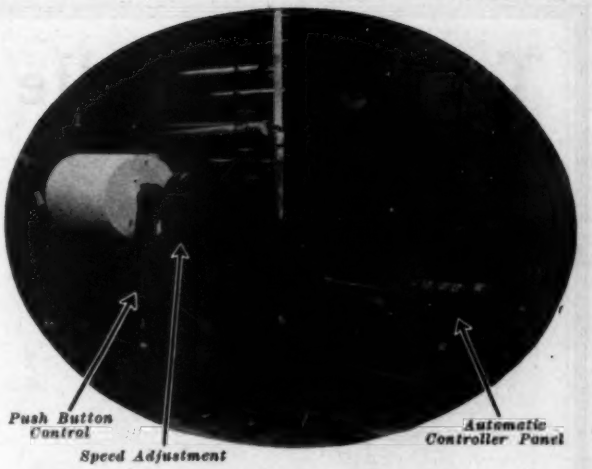
British Papermaking.—Paper is used nowadays in so many branches of industrial activity that its production is sometimes looked upon as an indicator of the general state of trade and, indeed, as a "measure of the nation's culture." On the latter grounds we have nothing to be ashamed of in this country, for the total British output of only 100,000 tons in 1860 had grown by 1920—according to an estimate published in the "Commercial" of February 15, 1923—to almost 1,211,600 tons, enough to supply almost two-thirds of the home consumption as well as an appreciable export demand. The Board of Trade now publish a further estimate for 1923 based on the weight of imported raw materials. They estimate the produce of paper from imported materials at about 825,000 tons, in 1920, and at about 800,000 tons in 1923; leaving, therefore, in 1920 about 387,000 tons of paper made from British raw materials. Assuming that the use of native materials did not diminish between 1920 and 1923 in greater proportion than that of imported materials, the output of paper and board in 1923 is then given as 1,175,000 tons, or about 3 per cent less than in 1920. The "Board of Trade Journal" adds that "production" in 1924 would appear to have decreased somewhat. It should, however, be added that the productive capacity owing to new plant laid down last year, is probably higher now than in 1920; moreover, the method of estimating home production on the basis of wood pulp imports is likely to lose its value in future years owing to the growing use of this material in the artificial silk industry.

The Last of a Famous Old British Paper Mill

"The Paper Maker and British Paper Trade Journal" quotes the "Northampton Daily Echo," which summarized recently the history of the Rush Mills, Northampton, which were destroyed recently by fire. The mills date almost as far back into history as Domesday Book, and their record can be divided into three periods and types of utility, first as corn mills, second as paper mills, and lastly as tallow melting works. Singularly enough the mills were the scene of a fire some seventy-seven years ago.

"The Northampton Daily Echo" goes on to state that "Historical evidence of the corn mills is very vague. They apparently occupied the site of the original village, or manorial mill, in the earliest times. The Royal Manor came into the hands of David I, King of Scotland, and it is certain that the privileges of the mill were guarded carefully by the owners. It is well-known that the inhabitants were compelled to have their corn ground at the mill of the Lord of the Manor. The fact also that it stands on the country side of the river indicates its country origin. The Nunn Mills, not far away, were erected by the Nunns of Delapre Abbey, hence the name, and, while Nunn mills were afterwards the scene of a cotton spinning experiment, Rush Mill, like several along the River Nene, were converted from corn to paper mills, and the high quality of its productions was said to be largely due to the excellence and quality of the available water.

"The first date any records give of the manufacture of paper at Rush Mills is 1833. In this year a Kentish papermaker, named Stacey Wise, acquired Rush Mills. Both steam and water were used for power, and hand-made paper of superior quality was produced. In 1840 Wise obtained the contract for the paper for the notes of the Bank of England, and for paper for fiscal stamps for the Government. Soon afterwards the postage stamp paper was made exclusively at these works, and there is little doubt that the paper for the English black



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CUTLER-HAMMER Automatic Control for your calender drives gives you low speed for threading in—a range of readily adjustable running speeds—safe automatic acceleration at a constant rate—and dynamic breaking.

The operator has the push button station and speed adjustment handle within every reach and there can control every movement of the calender.

This is typical of Cutler-Hammer Control equipment for motor-driven machines of any kind. Engineers in our branch offices are ready to consult with you on the adoption of control best suited to each individual motor applications.

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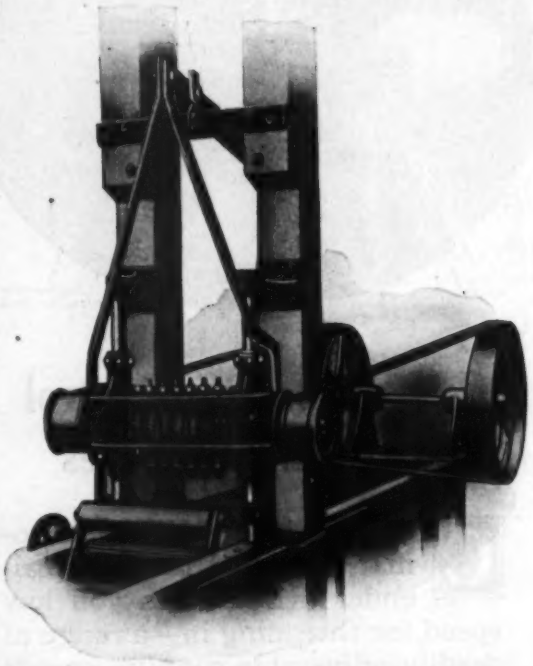
Twelve Spindle Boring Machine

FOR BLOWPIT BOTTOMS



THIS machine was especially designed for boring planks for bottoms of blow pits. It bores straight or taper holes up to $\frac{7}{16}$" diameter, 1" apart each way. Will bore plank 11" wide, 18' long, with holes 1" apart, in 20 minutes. We furnish machine with guides ready to attach to wood work.

E. M. Cross Machine Co.

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Send for Pulp Mill Circular P-123.

Typical Swenson Triple Effect Evaporator Handling Black Liquor

Swenson Reclaiming Machinery

FOR SODA AND SULPHATE MILLS

Our Experiment Station at Ann Arbor is equipped to make tests, on a commercial scale (under the direction of Prof. W. L. Badger) on problems involving evaporation, crystallization, heat transfer, etc., at a moderate charge.

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stamps, so highly prized by philatelists, was made at Rush Mills.

"Apart from Government work, however, first-class, hand-made paper, and, later, machine-made paper, was turned out from Rush Mills, and these papers had practically no superior. The chief water-mark used at the mill was 'Stacey Wise Hand-made,' with the figure of Brittania seated within a crowned oval. The mill was closed in 1879, but later a London firm took over the premises as an annex to their works in Kent.

"The paper for the notes of several joint stock banks was made, but it was not of the quality which was formerly produced for the Bank of England, and in 1888, the manufacture ceased. In 1889, the Sparre Patents Co., Ltd., reopened the mill for working a patent to manufacture by machinery a paper similar to that made by hand, but the venture was not a success, and the works were again closed. Subsequently the works were acquired by Messrs. Parker Gray & Co. for their business as hide and skin factors. The mills were adapted to the requirements of the business from time to time and the only portion of the original part of the paper mill which had not been converted has now been gutted by fire."

Marbling Paper

Mr. B. J. Sanson recently gave a lecture on this subject to the Printing, Bookbinding and Kindred Trades Overseas Association. Mr. Sanson commenced by pointing out that the credit for the invention and origination of marbling is claimed by at least four countries, Turkey, Germany, France and Holland, "but," Mr. Sanson continued, "whoever the claimant for its invention may be, marbling paper did not find much favor in this country (Great Britain) until about the Eighteenth century. For a long time, in fact, until within the last fifteen years, so little of it was understood that binders sent this part of their work to men called trade marblers, who made it their sole profession.

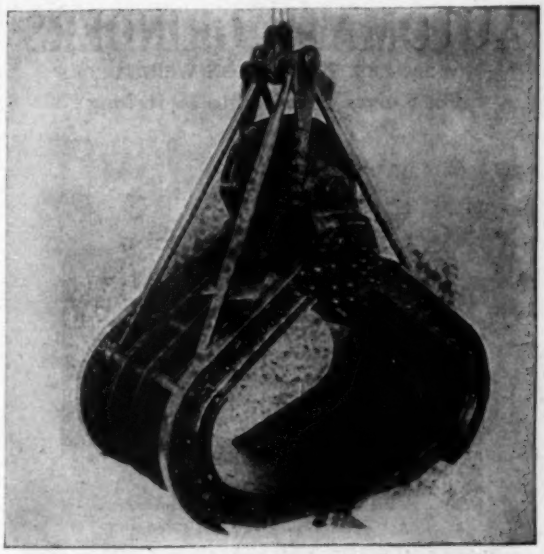
"Several attempts have been made to introduce new methods. A series of compo rollers has been tried, each color being rolled on to the flat edges of a book. Another method is by transferring on to the edges of the book by means of a transfer. In fact it is quite possible to transfer ordinary marble paper on to the flat edges of a book. The book is screwed up in a wooden press, and given a coating of egg albumen. A piece of marble paper is then laid face downwards on to the book, and by brushing the back of the paper with muriatic acid, commonly known as spirits of salts, a good transfer can be obtained. A machine is in use for marbeling the edges of a book, but, owing to not being able to get an even strength of color all over the surface of the gum, it cannot be regarded as effective. Marbeling may be defined as the art of arranging moist water colors upon an elastic surface so that they either will, or can be made, to readily assume sundry fantastic forms, such colors being transferred from the medium on which they lie to the edges of a book or the surface of a sheet of paper. Gum tragacanth and carragheen moss are the principal mucilages used for marbling purposes. Gum tragacanth is a product of various species of shrubs which are found in Greece and Turkey.

"Atmospheric and chemical changes affect the marbler considerably, and the temperature of the size is very important. Within a matter of 15 seconds, a thin skin forms on the top of the mucilage which occurs through the difference between the temperature of the size and that of the air in the room. Colors are just as important as the gum and marblers spend a tremendous amount of time in color grinding. If one is acquainted with color testing it assists considerably."

Russian Paper Production and Requirements

Russian paper requirements are continually increasing, and at present considerably exceed domestic production, according to a report made by the Central Paper Trust quoted in the September 10 issue of the Moscow "Economic Life."

Paper production has steadily progressed during the past four years but has been unable to keep pace with the demand and, while the output has increased from 29 short tons in 1921 to 83,865 tons in 1923, consumption during the same period increased from 82,150 to 117,989 tons. It is estimated



An Efficient Wood Grapple

FOR handling pulp, wood, dyewood and other small log material the O-S Dependable Wood Grapple meets with added efficiency, the needs of any paper mill in the country.

An O-S Locomotive or Truck Crane, equipped with a wood grapple is really the last word in material handling machinery.

No paper mill—however small, can afford to be without a crane. Greater volume of business is assured by owning one.

There is no limit to the number of feet of logs that can be unloaded from railroad cars in one day, because the O-S Dependable crane and grapple are the hardest workers on any pay roll. Work them overtime all you want, they will only return smooth and prolonged service.

Just a line will bring interesting data and bulletins.

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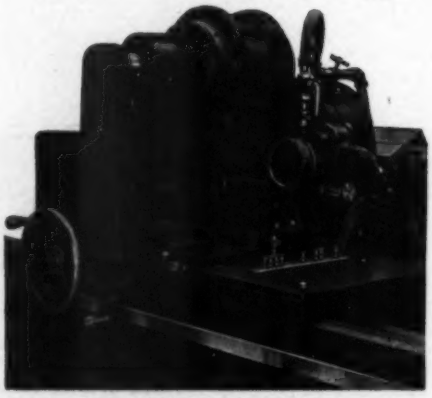
AUTOMATIC GRINDERS

200 LBS. TO TEN TON WEIGHT

For Knives 26 inches to 19 ft. long



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Straight wheel, cup wheel, ring wheel, sectional block wheel, sandstone wheel grinders.

Full automatic, semi-automatic and hand machines.

Stationary wheel and traveling work or stationary work and traveling wheel.

Belt or motor drive.

Open frame or fully enclosed, completely self-contained, cabinet base machines, for every variety of service.

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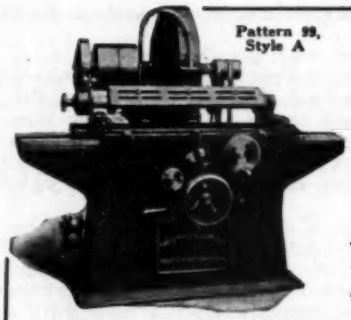

Pattern 99, Style A

OUR KNIFE GRINDERS HANDLE KNIVES FROM 30 INCHES TO 17 FEET IN LENGTH

A descriptive circular is yours for the asking

We also make Abrasive Wheels for Knife Grinding

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With Flexible Blades, Universal Adjustment and Control

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SIMONDS

Barker and Chipper Knives

The best knives for Pulp Mills. Made of the finest edge-holding steel, skillfully made and tempered right to withstand wear.

Write for Catalog and Prices

Simonds Saw & Steel Co.

Fitchburg, Mass. Chicago, Ill.

that the requirements of 1924 will reach 155,470 tons, of which the mills will be able to supply 70 per cent, leaving approximately 46,600 tons to be imported.

Prior to 1914 the annual paper requirements of the Russian Empire were approximately 614,000 tons, of which some 433,000 tons were produced locally and 181,000 tons were imported.

Foreign Trade Opportunities

Additional information regarding the following foreign trade opportunities issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce may be obtained from the Bureau in Washington, D. C., or its branch offices. It is requested that the number of the inquiry be given at all times.

No. 11728—Kraft wrapping paper for fruit and cotton growers. Johannesburg, South Africa. Agency desired.

No. 11763—Old newspapers. Amritsar, India. Purchase and agency desired.

No. 11848—Felts for paper machines, all kinds. Stockholm, Sweden. Exclusive agency desired.

No. 11885—Pasteboard and waxed linen paper, best quality. Castelfidardo, Italy. Purchase desired.

No. 11917—Paper. Durban, South Africa. General agency desired.

No. 11925—Vulcanized fiber. Vienna, Austria. Agency desired.

No. 11926—Paper. Bombay, India. Agency desired.

No. 11927—Wall papers and ceiling coverings suitable for industrial districts and in minimum quantities. Swansea, Wales. Purchase desired.

No. 12001—Caustic soda. Berlin, Germany. Purchase and agency desired.

Cellucotton Mill Started

The Cellucotton Products Company has started their new eastern factory in Niagara Falls, N. Y.

The Cellucotton Products Company was organized five years ago in Neenah, Wisconsin, as a subsidiary of Kimberly-Clark Company. During the war the Kimberly-Clark Company manufactured a super-absorbent known as Cellucotton, of which the entire output of two carloads a day was used by the American Red Cross and the Medical Supply Department of the Army.

After the war was over a new market had to be found for this product, when the Cellucotton Products Company was organized and started to manufacture Kotex, a sanitary pad, on a very moderate scale. The demand for it has increased so rapidly that from 1919 to 1924 three factories had to be built, which are now in operation in Neenah, Wisconsin.

So as to enable the company to be of better service to the eastern territory and take care of the ever-increasing demand, this new factory in Niagara was conceived which will eventually employ two hundred girls and fifty men.

The mill of the former Paper Converting Corporation has been transformed into a mill adapted for the purposes of the Cellucotton Products Company, with all the most modern sanitary measures taken into account.

Let Bugs Do the Barking

One of the expensive processes in paper making is barking the logs, for no bark should get into the wood pulp. Director Thornton T. Munger, of the Pacific Northwest Forest Experiment Station, has recently been informed by Dr. F. C. Craighead, of the Bureau of Entomology of the Department of Agriculture, that bugs can sometimes be persuaded to perform this work for the paper companies for nothing.

One Southern lumber company gets the bugs to work, Mr. Munger was told, by girdling close to the ground the pine to be cut for pulpwood. If this is done in the late summer, a multitude of bark borers and other beetles are attracted to the trees and in a few weeks have the bark so completely loosened that it can easily be slipped off when the trees are felled. At this point, however, the truce between beetle and forester is at an end, for logging, during the winter following, destroys the insects harbored in the bark, and this one abundant feast is their last.

In
Richmond, Indiana
or in
Rangoon, India

WHEREVER pulleys are turning. In any factory. In any country. A Graton & Knight Standardized Series Belt is always the same.

The Standardized Series is a grouping of brands of Graton & Knight Leather Belts. Each made to rigid specifications to do its type of work best. Each held to unvarying *standards* all the way through so two belts of the same Standardized Series brand must be identical in every respect.

Replacements stop being a source of trouble. Just order the same Graton & Knight Standardized Series Belt. Put it to work with pleasant certainty. Sure it will deliver power as faithfully as the veteran it replaces. For two belts of any one Standardized Series brand are always exactly the same, whether you buy them in India or Indiana!

They will always be made of the same honest, pulley-hugging leather. The same in weight, thickness and flexibility. Built to give you the same extra-long, economical transmission service.

Write for booklet 101-S, which gives full information about Standardized Series belts for paper mills.

THE GRATON & KNIGHT MFG. CO.
Tanners—Makers of Belts and Other Leather Products
Worcester, Mass.

GRATON KNIGHT

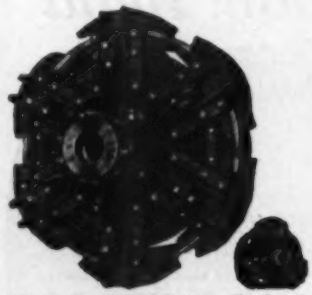
Check this list of Graton & Knight products for informative booklets on the subjects which interest you.

Flat Belt	Lace Leather	Whole Leathers
Round Belt	Leather Packings	Cements
Fan Belts	Leather Straps	Preservatives

GRATON & KNIGHT
Standardized
LEATHER BELTING

"HILL CLUTCH" MILL EQUIPMENT

YEARS OF SERVICE AT FULL EFFICIENCY— NOT THE FIRST COST, ARE THE TRUE TEST OF FRICTION CLUTCH ECONOMY



"Smith Type" Hill Friction Clutch cut-off couplings (patented)

The "SMITH TYPE" HILL CLUTCH is a safe and practical investment that pays dividends.

When the load is applied, this clutch can be depended upon to *"stand the gaff."*

Designed along correct mechanical lines.

Frictional contact 100% effective.

Lots of reserve power. Built in 20 sizes from 9 to 1300 H.P. at 100 R.P.M.

Install the "Smith Type" Hill clutch for economical operation of prime power units, individual machines, sections of shafts, or group drives.

The Hill Clutch Machine & Foundry Co.

General Office and Works
Cleveland, Ohio

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IF YOU USE CHAINS USE UNION CHAINS

"The Chain of Double Life"

THEY GIVE LONGER SERVICE PER UNIT OF COST

The bridged steel link insures strength and permanency. The large case-hardened pins and bushings, both reversible and renewable, insure durability and economy.

We can fill any of your requirements for elevators and conveyors, roller chains, bushing chains, attachment links, cast, cut, and renewable tooth sprockets.

Let Us Have Your Inquiries

THE UNION CHAIN & MFG. CO.
SANDUSKY, OHIO

BARRE GRANITE IN PRESS ROLLS

Is Revolutionizing the Whole Paper Making Industry

If your Paper Machines are not equipped with Press Rolls of BARRE GRANITE you are not getting the results that you should get, for it is a recognized fact that granite rolls are much superior to any others and Barre Granite the best of all. Let us tell you about them.

Jones Brothers Company

BARRE, VT. **BOSTON, MASS.**

National Paper Trade Holds Fall Conference

The National Paper Trade Association held its Fall Conference at the Drake Hotel, Monday, Tuesday and Wednesday, October 13, 14, 15, 1924. All of the meetings were well attended. The first day was devoted to a meeting of the Board of Directors, the Writing and Cover Conference Committee meetings, sessions of the Executive Committee and Conference Committee (Wrapping Paper) and Writing and Cover Conference. Monday evening the Wrapper Division had its conference dinner. Tuesday's program consisted of a meeting of the Executive Committee of Fine Paper, which was followed by a meeting of the Wrapper Paper Division, which was a session of extreme importance.

At the director's meeting, it was decided to have their annual meeting in New York in April. It will be noted, therefore, that while the manufacturers will have their annual convention in New York in February, the merchants will meet in April, and, therefore, these two branches of the industry will not meet at the same time as has always been the case.

A number of very interesting addresses were made during the meeting and reports from different committees, as well as many of the problems of the merchants were gone over and thrashed out, and we are sure will be helpful to every one who was in attendance.

Among the reasons for the merchants holding their meeting in April, or at some other time than when the manufacturers hold theirs, which will be in February, were that the jobbers do not balance their books in time to have an accurate gauge on business conditions in February, and the danger of inclement weather either delaying or preventing members from attending the convention. Also that the southern paper merchants declared that February was the busiest month in the year for them and that they would be unable to leave their business at that time to attend the convention.

One of the reasons advanced by the manufacturers for the holding of the meeting in February was that inventories are taken in January and that by holding the annual meeting in February, there would not be a long break between inventory time and the annual meeting. Manufacturers could then return home and devote their efforts to pushing for business, when they ordinarily would await the time of the annual meeting to try to get a line on actual conditions, hence the desirability of having the annual meeting as soon as possible after inventory time. The merchants do not seem to think this is true and therefore will hold their meeting in April as usual.

Superintendents at Niagara Falls Next June

The Executive Committee of the American Pulp and Paper Mill Superintendents' Association held a meeting in Buffalo, New York, Sunday, October 12th and selected Niagara Falls, New York, as the meeting place for their spring convention. The dates are June 4, 5, 6.

The meetings will be held at a new hotel which is now being built and which the Executive Committee was promised would be ready long before the meeting.

Forest Conference Not to Be Postponed

Acting Secretary Howard M. Gore, of the Department of Agriculture, announces that the Conference on Utilization of Forest Products, called by the late Secretary Wallace for November 19 and 20 will not be postponed.

Secretary Wallace regarded waste reduction as one of the most important phases of forest conservation and expected much to be accomplished by the forthcoming conference. The Department will commemorate his great service to forestry by carrying out the conference as he planned.

Salesmen Discuss Outlook

Discussions of present markets for paper, in a round table report of business conditions, at a recent meeting of the New York Division of the Salesmen's Association of the Paper Industry, disclosed a very favorable situation.

Production at present is up to normal, with three months

STRONG GRIP-LONG LIFE

Leather Belt has more pulling grip than any non-leather belt. Tannate has more than any oak leather belt. If you doubt this, visit our testing laboratory at Wilmington, Del. Then check up our tests by any other evidence. We want you to know whatever truth will help you to the best transmission. If you have puzzling problems consult our engineers. Watershed Tannate will work under water.

J. E. RHOADS & SONS

Philadelphia, 47 N. Sixth St.; New York, 114 Beekman St.; Chicago, 334 West Randolph St.; Atlanta, 50 South Forsyth St.
Factory and Tannery: Wilmington, Del.

ALLIGATOR
STEEL BELT LACING

IN any installation where the belt will stand up, Alligator Steel Belt Lacing gives reliable service—often lasting the full life of the belt. **Applied with a hammer as the only tool.** Compresses the belt ends in a grip of steel, each tooth a tiny vise that prevents unequal stretching, tearing and internal friction on belt ends.

Used and recommended by leading manufacturers of transmission and conveyor belting. Makes friends easily—and keeps them. At your dealer's.

Flexible Steel Lacing Company
4675 **Lexington Street** **Chicago, Illinois**
In England at 135 Finsbury Pavement, London, E.C. 2

THE WATERBURY FELT CO.
SKANEATELES FALLS
New York

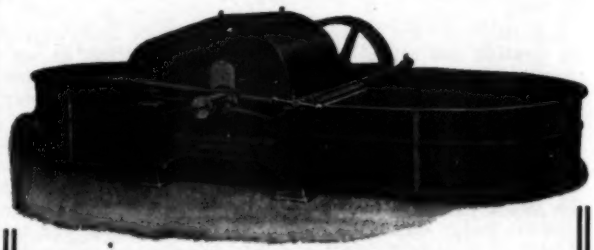
FELTS and JACKETS

Top and Bottom Wet Felts for board machines, with all the qualities requisite to insure long life and continuous production.

They Satisfy

The Stickle system of removing air and condensation from the dryers, combined with the Stickle automatic control of steam, will produce a more uniform dried sheet with less steam consumed than can be done with any other equipment. We will guarantee this under a competitive test.

Stickle Steam Specialties Co.
Indianapolis, Ind.
New York Office: 46 East 41st Street, New York
Boston Office: 52 Sudbury Street



"Dayton"
Beating Engines
are Built
for
Heavy Duty

Dayton Beater and Hoist Co.
DAYTON, OHIO

TANNITE DECKLE STRAPS

For Fourdrinier Paper Machines

A new improved product made with
our new equipment by

STOWE & WOODWARD CO.

The Rubber Roll Makers
NEWTON UPPER FALLS, MASS., U. S. A.

ahead for which there is a great prospect of improvement in demand. Some mills are reported to be refusing to accept long-time contracts for paper carrying far into 1925, and many purchasers are seeking to assure themselves of a future supply to meet anticipated requirements from the consumers.

The next regular meeting of the Box Board Association will be held on November 17, 1924, at the Roosevelt Hotel, New York City, at 10:30 o'clock, A. M.

National Forest Resources Bring in Over $5,000,000

Receipts from national forest resources during the fiscal year ending June 30, 1924, totaled $5,251,903, according to the final tabulation made by the United States Department of Agriculture.

This amount is $84,000 less than the receipts for the previous fiscal year, but is $840,000 larger than the average annual receipts of the preceding five years.

Sales of timber and livestock grazing permits were responsible for most of the money received, $3,036,395 having been paid for timber and $1,915,561 for grazing permits. Permits for the use of national forest lands for summer homes and other forms of special use, including water power, brought in $299,946.

Under authority of the acts of Congress governing receipts from national forest resources the sum of $1,346,353 will be paid to the States containing national forest land for the use of the school and road funds of the counties in which such land is situated. In addition, the sum of $520,739 derived from forest receipts will be expended by the Forest Service in building roads and trails within the forest areas. Other road funds are provided by special appropriations.

With the exception of these sums, amounting in all to $1,867,092, the balance of the receipts—$3,384,811—will be paid into the general fund of the United States Treasury.

The amounts the various States will receive for county road and school funds are calculated on the basis of one-fourth of the total receipts from national forest resources within each separate State. The funds for roads and trails within the forests are computed on a one-tenth basis.

Twenty-eight States and Alaska shared in the distribution of the two funds. Including both the sums to be spent on national forest roads and trails and the sums payable to the various counties for roads and schools, California will receive $434,889, Oregon $247,721, Idaho $184,277, Arizona $175,014, Colorado $125,280, Washington $124,660, Montana $115,901, Wyoming $99,634, Utah $81,466, New Mexico $68,077, Nevada $35,653, and South Dakota $34,208.

Arkansas will receive $23,002, Virginia $13,276, North Carolina $12,990, New Hampshire $12,732, Minnesota $8,726, Florida $8,311, Tennessee $4,859, Nebraska $3,912, Georgia $3,605, Oklahoma $2,655, West Virginia $1,292, Maine $1,010, South Carolina $569, Pennsylvania $350, Alabama $248, and Michigan $41.

Alaska will receive $42,720, a sum almost twice as large as the territory received last year, thus indicating a corresponding increase in timber sales from Alaska's two national forests.

American Clays Good for Paper Making

That American clays compare favorably with foreign clays as fillers in making paper is the conclusion drawn from an investigation of clays for this purpose made at the Bureau of Standards of the Department of Commerce. The amount of clay retained in the paper, and in general the quality of the paper, were found to be the same for both American and foreign clays. A slight advantage for the foreign clays was shown by the color and grit tests, but the bureau does not consider it sufficient to justify the consideration of only these properties in selecting clays.

The results of this investigation, and the methods used, are reported in Technologic Paper No. 262 of the Bureau of Standards. Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C. The price is 15 cents, cash.

The trap that's been through the mill

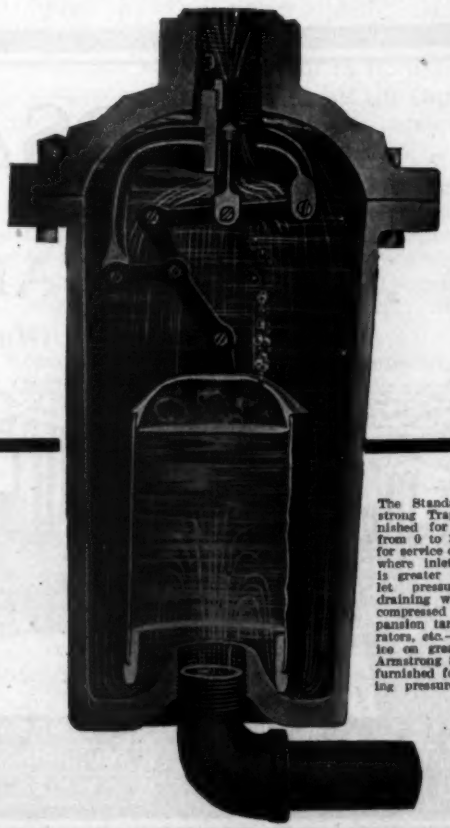
THE Armstrong Trap was designed for the express purpose of draining paper machine dryers; and no more difficult task could have been undertaken.

How well the Armstrong succeeded in meeting this trying condition is attested by its dominance in the paper industry. It is significant to paper mill men that the ever-widening application of Armstrong Traps in all industrial fields is based to a great extent on its career in the paper mill. Here truly is a trap that has been through the mill unmarred by a single fault. Can any other trap equal its record?

Ask for catalog and details of 90-day test offer.

Armstrong Machine Works
322 Steam Saving St., Three Rivers, Mich.

Armstrong Steam Trap



The Standard Armstrong Trap is furnished for pressures from 0 to 300 lbs.—for service on vacuum where inlet pressure is greater than outlet pressure—for draining water from compressed air expansion tanks, separators, etc.—for service on grease. The Armstrong Special is furnished for pulsating pressures.

P111-M-RTC

Pickles' Patent
Automatic Steam Regulator
FOR
Paper Making Machines

Which absolutely control the drying of the sheet. Installed on sixty days' trial

W. F. PICKLES **Buckland, Conn.**

Fitchburg Duck Mills
ESTABLISHED 1844
FITCHBURG, MASS.
MANUFACTURERS OF
STANDARD AND MULTIPLE PLY
DRYER FELTS
English Weave in Two, Three, Four, Five and Six Ply—60 Inches to 176 Inches in Width

Fine Faced Felts for Fine Papers. Absolutely no felt marks in paper. TRIUNE Three Ply Felts for Coarse Papers.

LOCKPORT
Felts
EXCLUSIVE MAKERS OF
Paper Makers' Felts

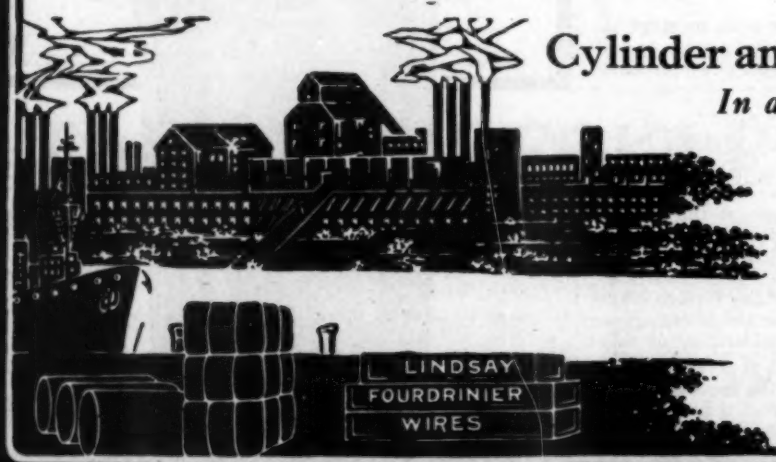
Have You Run Them?
If Not, Why Not?

Are You Interested
in
Accurate Running
Felts?

Give Us a Trial
Get Authentic Information
Ask the Men Who Run Them

Yours for service
LOCKPORT FELT CO., Newfane, N. Y.

LINDSAY WIRES
are
DURABLE AND DEPENDABLE
Made in all sizes



Cylinder and Washer Wires
In all Meshes

The Lindsay Wire Weaving Company
Collinwood Sta. Cleveland, Ohio

New Catalogs, Booklets, etc.

(Kindly mention The Paper Industry when writing for these booklets.)

REVOLVATOR COMPANY, 336 Garfield Ave., Jersey City, N. J.—Bulletin No. 68, "How to Pile," illustrating and describing their machinery for piling all kinds of paper and other materials.

SHEPARD ELECTRIC CRANE & HOIST CO., Montour Falls, New York—Booklet describing this company's floor operated electric hoists. Full of information for any one who is interested in this type of machinery.

TECHNICAL PAPERS NATIONAL LIME ASSOCIATION—Booklets giving the technical papers and addresses at the Sixth Annual Convention of the National Lime Association and Twenty-second Annual Meeting of Lime Manufacturers, held at White Sulphur Springs, West Virginia.

MAGNOLIA METAL CO., 113 Bank St., New York—Booklet describing this company's new Magnolia bearing metals. Full of interesting material on this subject.

WM. B. SCAIFE & SON'S CO., Oakmont, Pa.—Bulletin No. 194 on Scaife Scientific Water Purification for All Purposes Filtration. This book deals with the subject of filtration in general, carries a number of illustrations of typical filter installations for industrial uses as well as tables of sizes and capacities of filtering units.

DARR-ERHARDT PRESS, INC., 25 W. 19th St., New York—Book entitled "Starches, Their Fluidity and Viscosity in Relation to Sizing Value," written by Walter A. Nivling, consulting chemist and authority on starches. The price is $1.00.

FOOTE BROS. GEAR & MACHINE CO., 213 No. Curtis St., Chicago—New IXL speed reducer catalogue just off the press, which is full of information on the subject of speed reducers and their uses.

INGERSOLL-RAND CO., 11 Broadway, New York—Booklet entitled "One Hundred and One Ways to Save Money with Portable Air Power" describing this company's portable air compressors, which are finding greater use in the industry all of the time.

DEPARTMENT OF COMMERCE, BUREAU OF STANDARDS, Washington, D. C.—Booklet entitled "Comparison of American and Foreign Clays as Paper Fillers."

THE NATIONAL COMMITTEE FOR THE PREVENTION OF BLINDNESS, INC., 130 E. 22nd St., New York—Book entitled "Eye Hazards in Industrial Occupation," which is full of real information for any industrial plant where the work is dangerous to the eyes.

ALLIS-CHALMERS MFG. CO., Milwaukee, Wis.—Bulletin No. 40-8 on "Allis-Chalmers Timken Roller Shaft Bearings," showing construction of these bearings as applied to industrial application.

ATLAS VALVE CO., 282 South St., Newark, New Jersey—Bulletin No. 5A describing this company's hydraulic damper regulators.

STOKER MANUFACTURERS ASSOCIATION—"Condensed Catalogue of Mechanical Stokers," which is a complete catalogue of the various competitive manufacturers of mechanical stokers and is part of the educational advertising campaign being conducted by the Stoker Manufacturers Association, and no doubt has considerable that is interesting to paper manufacturers.

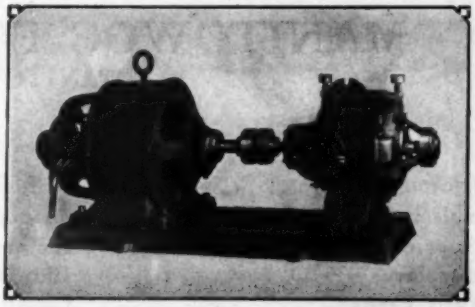
OLIVER CONTINUOUS FILTER CO., 33 W. 42nd St., New York—Bulletin No. 15 giving general description of design, construction and operation of Oliver Continuous Filters.

The National Safety Calendar

The 1925 Calendar, issued by the National Safety Council, far surpasses in art and value any of their past productions. Of marked note is the information on general accident prevention printed on the reverse side of each calendar sheet.

In the past, the National Safety Council has published a yearly calendar for the use of its members exclusively. This year, however, they are making it available at nominal cost to the public.

Offices of the Marquardt-Hewitt Corporation, dealers in paper mill supplies, have been moved from 250 Front street to 16 Ferry street, New York.



Nash Hytor Vacuum Pump, direct-connected to electric motor. Supplied for capacities ranging from 25 to 2150 cu. ft. air per min. at a vacuum of 12" of mercury

Removing the water without causing crush or felt marks

REMOVING water from paper by means of a powerful rotary vacuum pump connected to the stationary suction chamber of suction rolls and flat boxes dispenses entirely with disarrangement of the fibres in the paper, with crush marks, felt marks, etc. In fact, an efficient vacuum pump is in many instances indispensable for the rapid and proper operation of modern high speed paper machines.

Paper mill engineers recognize the importance of this, and hundreds of concerns throughout the country are therefore relying upon Nash Hytor Vacuum Pumps for removing the water in accordance with the most modern paper mill requirements.

Nash Hytor Vacuum Pumps handle large volumes of water with air continuously and efficiently. Suction is steady and entirely free from pulsation. Only one-third the space and one-half the horsepower consumed by other pumps of equivalent capacity are required.

Write for descriptive literature.

NASH ENGINEERING CO.

South Norwalk Connecticut

Nash Hytor

VACUUM PUMPS AND COMPRESSORS

2008-38

MANITOWOC ENGINEERING WORKS
MANITOWOC, WISCONSIN

Designers and Builders of

Digesters
Paulson Barking Drums
Experimental Digesters
Autoclaves
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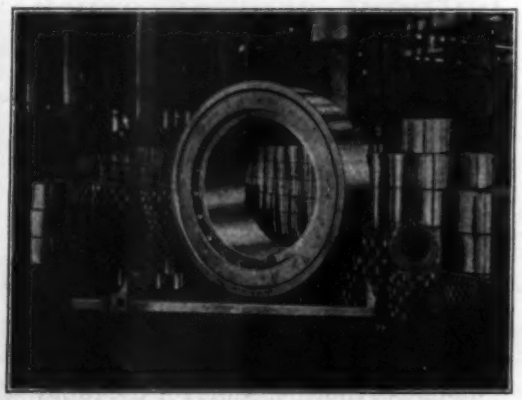
Diffusers
Disc Evaporators
Incinerators
Blow Pipes
Causticizing Tanks
Howard Refiners
Storage Tanks
Cylindrical Rotaries and Globe Rotaries
Bleach Mixers
Clay Mixers

THE HART BEARING



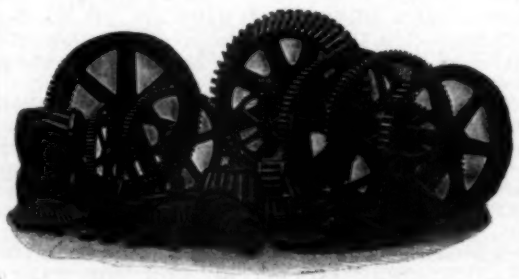
If you have bearing troubles we are prepared to help you. Nothing too large or difficult. Our bearings are standard and extensively used in paper machinery.
Let our engineers solve your problems.

The Orange Bearing Co.
ORANGE, N. J.

Your Gear Problems Solved by Using

POOLE GEARS

THE GEAR THAT IS DIFFERENT



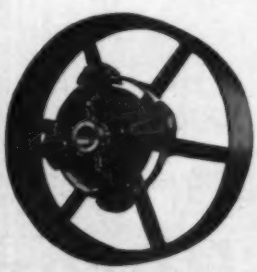
16,000 different patterns.
All kinds, types and sizes.
Correctly designed—Best material and workmanship.
Unlimited capacities.
Most accurate cast gears made.
A skilled organization of 81 years' experience.
A gear service unequalled.
Tell us your gear troubles.

Catalog?

Poole Engineering & Machine Co.
Baltimore, Md.

A complete line of

Power Transmission Machinery
FOR
BELT AND ROPE DRIVES
MANUFACTURED BY
THE FALLS CLUTCH & MACHINERY COMPANY



FALLS SOLID FRICTION CLUTCH PULLEY

NEW YORK
286-288 Fulton Street

Cuyahoga Falls, Ohio

BOSTON
52 Purchase Street

Catalogues upon request

Dr. Bruno V. Nordberg

An unusual career was brought to a close with the passing of Dr. Bruno V. Nordberg, founder of the Nordberg Manufacturing Company, whose death occurred on Thursday, October 30th, 1924.

For more than forty years he has been closely associated with engineering progress. Dr. Nordberg was recognized in the engineering world as one of the foremost inventive geniuses of his time. As a steam engineer he stood pre-eminent in the period in which he lived. His unusual skill and engineering foresight is shown in special installations found throughout the country and particularly in the mining fields. The machinery which he designed will stand for years as monuments to his ability.

One of the reasons for the attainment of the high respect which Dr. Nordberg held among the engineering profession was his constant endeavor to improve the efficiency of existing designs and ever working toward improvement in design that would permit of higher economies. In this direction he was unusually successful. He early recognized the possibilities of the poppet valve when used in connection with steam engines, also the opportunity there was of improving the efficiency of the slide valve steam engine, which was then in common use, providing a better control of steam admission could be obtained. As a result he designed a poppet valve governor for engines of this type, which permitted an economy that was considered impossible at that time.

The adoption of the poppet valve at this early period again shows the keen foresight which he possessed. In later years this type of valve became an absolute necessity in order to utilize the high steam pressures and superheats of modern steam practice. It is the type of valve used today on Nordberg Uniflow Engines.

Dr. Nordberg was a member of many engineering and scientific societies and was honored by mechanical experts both in this country and Europe. The degree of Doctor of Engineering was conferred upon him by the University of Michigan in 1923, in recognition of his skill in the design of special machinery, which was a vital factor in the copper development of the state.

During the later years of his life, the burdens of Dr. Nordberg were gradually placed upon younger shoulders. The organization which he had perfected, had proved its ability to continue on a sound basis, the foundation for which he had so firmly built.

We are in receipt of a copy of the Bogalusa Enterprise, a paper published at Bogalusa, Louisiana, and is a special edition to celebrate the opening of the new Kraft mill of this company. The whole edition is in three sections and is printed on Kraft paper made by this company. The Bogalusa Paper Company now produces one hundred and twenty-five tons of container lining, eighty tons of pulp and fifty-five tons of Kraft wrapping paper every twenty-four hours.

The Combustion Engineering Corporation announces that Mr. James Cleary, formerly manager of their Philadelphia office, will assume management of the Detroit and Cleveland territories with headquarters in Detroit. Mr. Frank Henderson will continue in charge of the Cleveland office. Mr. Joseph Lappin, formerly in charge of the Detroit office, has been assigned to New York for special work. The Detroit office has been removed from the Penobscot Building to the Book Building.

The Pennsylvania Salt Manufacturing Company announces the purchase of the capital stock of the Michigan Electrochemical Company, at Menominee, Michigan. The purchase was made from funds on hand, and no additional stock will be issued. The plant, while not one of the largest in the country, occupies a strategic position, and the products are identical with those made by the plants of the Pennsylvania Salt Manufacturing Company.

Nils R. Johaneson, president of Johaneson, Wales & Sparre, Inc., wood pulp agents of 16 East Forty-first street, New York, returned from a business trip to Europe early in October.

THE LENIX*

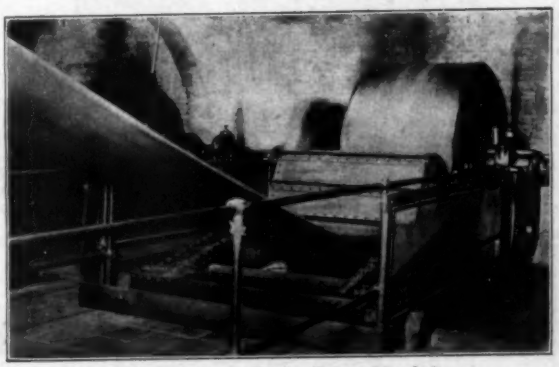
short center

BELT DRIVE

No. 000 1 to 15 H. P. | No. 00 10 to 25 H. P. | No. 0 20 to 50 H. P. | No. 1 40 to 100 H. P.

The Lenix is in use with units as

LOW AS 1 HORSEPOWER



1400 H. P. Steam Engine Driven Lineshaft

HIGH AS 1400 HORSEPOWER

A manufacturer of electrical appliances was considerably surprised recently to learn that the Lenix is applicable to small belt drives. He was familiar with the Lenix but was of the impression that its use was confined to large drives, 100 H. P. and upward.

Large and small **Lenixes**, everywhere are

saving floor space
eliminating belt slippage
increasing general capacity

of the drives on which they are installed.

Booklet, "Saving Slippage and Space," tells why
Send for a copy

F. L. SMIDTH & CO.

Engineers

50 Church Street **New York City**

*Registered

Make One Boiler Do the Work of Two

WITH the Morehead Back-to-Boiler System you can often double a boiler's efficiency. The system will return the condensation to your boilers as hot distilled feed water—saving fuel and cutting down repair expense.

The simple and compact system will enable you to do away with your extravagant and troublesome steam pumps or injectors. The Morehead system will feed your boilers positively and automatically. Repairs are seldom needed. Parts are quickly and easily replaced when necessary. Write us. Our engineers will work on your problems without obligation on your part.

Morehead Manufacturing Co.

Dept. O, Grand River Ave., at Warren

DETROIT MICHIGAN

(133)

170% Return on Investment in 2 Years

That's the experience one industrial firm reports with the Godfrey Conveyor and this is by no means an exception to the rule. When you realize that one man handled 65,000 tons of coal in a year with this equipment, you will understand how it is possible to effect such a remarkable saving. Regardless of what your coal handling problem may be, the Godfrey system offers a satisfactory solution. Ask for a copy of Bulletin A-1.

GODFREY CONVEYOR CO. **Godfrey CONVEYORS** ELKHART, INDIANA

A total of $35,000 is being spent by the Columbia River Paper Mills for adequate fire protection in the shape of a thoroughly up-to-date automatic sprinkler system. An immense tank of 50,000 gallons capacity is being suspended 120 feet in the air at a cost of $10,000.

The Portland, Ore., plant of the Independent Paper Stock Company suffered an almost complete loss of stock, machinery and fixtures September 29, when the establishment was swept by a devastating fire of unknown origin. F. H. Neville, manager of the plant, placed the loss at $25,000.

W. B. Snowball, Canadian pulpwood operator and interested actively in pulp manufacturing enterprises for many years, has been elected to the Federal Constituency of Northumberland, N.B.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912

Of The Paper Industry, published monthly at Chicago, Illinois, for October 1, 1924.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared A. Scott Dowd, who, having been duly sworn, according to law, deposes and says that he is the Editor of The Paper Industry, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor and business managers are:
Publisher, Edward B. Fritz, 356 Monadnock Bldg.; Editor, A. Scott Dowd, 356 Monadnock Bldg.; Managing Editor, A. Scott Dowd, 356 Monadnock Bldg.; Business Manager, Edward B. Fritz, 356 Monadnock Bldg.

2. That the owner is: (If the publication is owned by an individual his name and address, or if owned by more than one individual the name and address of each, should be given below; if the publication is owned by a corporation the name of the corporation and the names and addresses of the stockholders owning or holding one per cent or more of the total amount of stock should be given). Edward B. Fritz, 356 Monadnock Bldg.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state). None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is (This information is required from daily publications only.) A. SCOTT DOWD,

(Signature of editor, publisher, business manager, or owner.)

Sworn to and subscribed before me this 14th day of October, 1924.

(Seal) S. J. LEHRER.

(My commission expires June 30, 1928.)

FOR SALE: Two Spangenburg Rotary Paper Screens with counter and pulleys. Used only few weeks. Plates .036 cut. Complete in every detail and good as new. Price $1,500 each f. o. b. Bastrop, which is half price. Bastrop Pulp & Paper Co., Bastrop, La.

Patents, Trademarks and Copyrights

Expert, prompt and personal attention in patent and trademark matters. Inquiries solicited. Fourteen years' experience. Lester L. Sargent, Patent Lawyer, 524 Tenth St., N. W., Washington, D. C.

GURNEY BALL BEARINGS

Maximum Service Maximum Capacity Type

IN PAPER making machinery Gurney Ball Bearings—Maximum Service—Maximum Capacity type—offer a real solution of your bearing problems.

Using more balls of the largest permissible size enables Gurneys to safely carry greater loads than other bearings of equal size.

They are well suited to the peculiar requirements of paper making machinery where capacity and endurance—together with low maintenance costs—are essential to safe and profitable operation.

Our engineers are at your service—when you want assistance for the elimination of friction ask their advice.

1334

GURNEY BALL BEARINGS

Marlin-Rockwell Corp.

JAMESTOWN, N. Y.

J. O. ROSS ENGINEERING CORPORATION

30 E. 42nd STREET, NEW YORK CITY

CHICAGO, ILL. TACOMA, WASH. BOSTON, MASS.

ROSS ENGINEERING OF CANADA, LIMITED

NEW BIRKS BUILDING, MONTREAL

Machine Vapor Absorption Systems
Briner Economizers
(Licensed Under Patents of E. A. Briner and John Alexander)
Machine Room Ventilation
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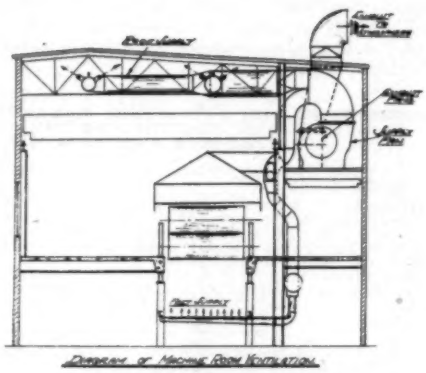
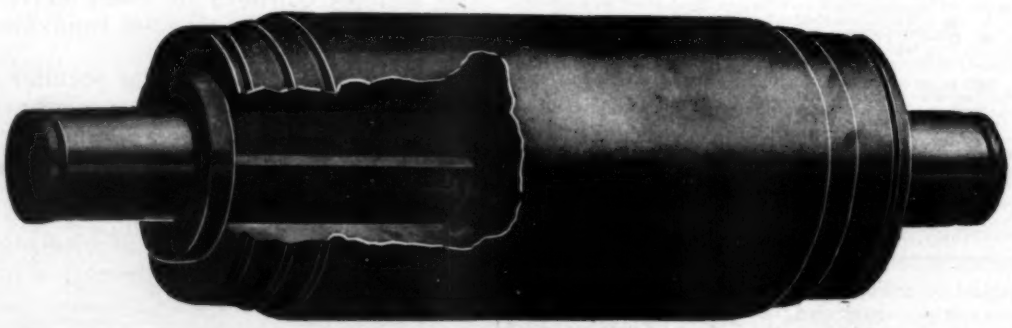


Typical layout for modern machine room. Supply and exhaust apparatus is located on balcony back of machine. Exhaust fan draws vapor from hood and exhausts to atmosphere. Supply fan blows through duct system to roof and supplies air under pit.

PERKINS CALENDER ROLLS

COTTON PAPER HUSK



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Technical Developments in the Paper Industry

Domestic and Foreign

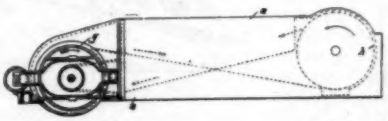
The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Easy-Bleaching Cellulose

A PROCESS of German origin is described in United States Patent No. 1,509,273, which is concerned with the manufacture of an easy bleaching pulp. Vegetable fibers of various sorts and waste materials as well are first treated with a liquor which has an acid reaction so that the fibers are subjected to cidic hydrolysis. Then the material is treated with a dilute solution of alkalies, such as carbonate of soda, and finally the cells of the fibres are isolated by a treatment with oleic acid.

A Pulper

THE illustration shows the construction of a pulper, as it is patented in United States Patent No. 1,509,334. There are three channels which are arranged parallel to each other and are made with a step gradient. A grinding device is located at each end of the channels in such a manner that the pulp is raised to the highest points in the channel bottoms. Means are provided for introducing the pulp into the grinders in an axial direction.



Removal of Silicic Acid from Waste Soda Liquors

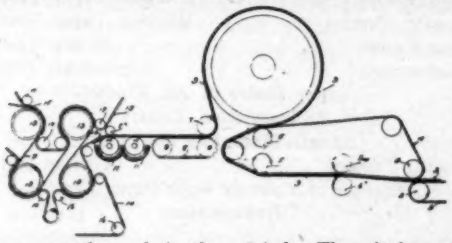
THE reaction between sodium silicate and lime is not instantaneous, and the presence of the former in the waste lye leads to incomplete causticization, as well as to the formation of slimy precipitates. Prolonged and vigorous agitation increases the completeness of the causticization, and also assists the precipitation of calcium silicate in a crystalline form. It is further important to ensure that the milk of lime is of maximum reactivity; for example, when shaken with water and left to settle, the clear solution should contain at least one-tenth of one percent of dissolved lime. Rapid separation of crystalline calcium silicate is obtained by heating the well-agitated mixture after causticization, for from one to two hours under pressure. For further details see Zellstoff und Papier, volume 3, pages 259-260.

Beating and Refining Pulp

A BEATING and refining apparatus for paper making comprise a vertically disposed rotor longitudinally fixed and operating inside a shell or casing, which is provided with one or more rings of metal, carborundum, hard veined flange fixed to the rotor, and a veined ring secured to cause fraying. The clearance between the rotor and rings is gradually reduced from the inlet end to the outlet. The rotor is of cast iron, steel or bronze, and is provided with knives which may have a slight spiral setting. The rings are mounted on lugs resting on spiral ribs, so that the casting may be adjusted to the rotor by rotation of the rings. The treated material is delivered from the apparatus between a veined flange fixed to the rotor, and a veined ring secured to the casing and adjustable to and from the flange. The shell and rotor may be hollow and may be cooled by attachment to a water supply. The kind of stock produced may be regulated by the speed of the rotor, the distance from the shell and the concentration of the stock, which latter may be diluted by means of a water supply admitted to the feed opening. In another arrangement the rotor is more acute in design, the rings are adjusted by worm or other gearing, and the flange and ring are dispensed with. British Patent No. 216,974.

Making Crepe Paper

A METHOD of making crepe paper is shown in diagrammatic form in the accompanying illustration. The process is continuous and the paper stuff is formed into a web in the



usual manner; the web is then dried. Then it is moistened as it passes from the drying apparatus and it is creped, after which it is dried once again. The process is patented in United States Patent No. 1,509,418.

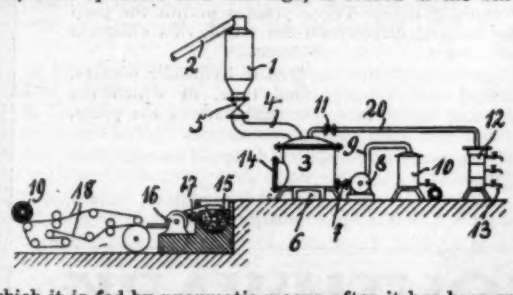
Recovery of Gases and Heat from Digesters

GASES and vapors from pulp digesters are led through a condenser within a closed pressure vessel containing raw liquor, and the condensed vapors are afterwards scrubbed by means of raw liquor or further condensed in another apparatus. Gases and vapors from the digesters are also directly led through the raw liquor contained in the pressure container, so that the discharge of the digesters is accelerated. A condensate is thus obtained and the raw liquor is heated, without decomposition, to any desired temperature. German Patent No. 394,349.

Making Pulp and Recovering Rosin and Turpentine

GERMAN patent No. 400,857 contains an interesting process in which a pulp is manufactured and at the same time there are recovered both rosin and turpentine as well as other similar products. The apparatus that is employed in this process is seen in diagrammatic form in the accompanying illustration.

The raw material, which may consist of branches of trees, knots, bark splinters and shavings, is stored in the bin (1)



to which it is fed by pneumatic means after it has been properly comminuted. Underneath the silo there is placed a digester (3), which is connected with the former by means of the pipe (4) which is controlled by the valve (5). The digester is heated directly over an open fire or indirectly by means of a steam coil. The outlet valve is seen at (7) on a pipe which connects the digester with the pump (8) and a settling vessel (10). In this vessel, after the digestion is completed, the

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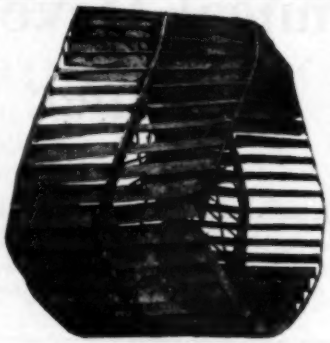

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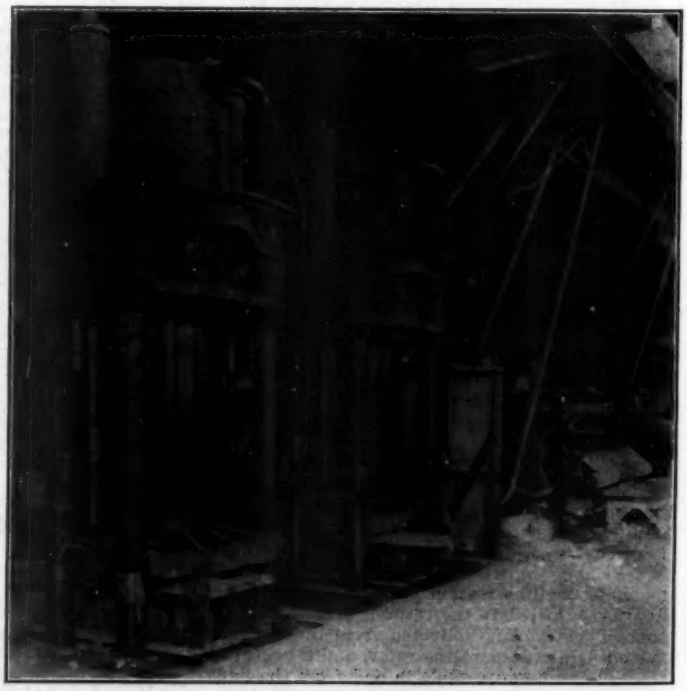


Two 600 Ton Southwark Pulp Presses. Part of a Battery of Six Southwark Machines Installed at the Backus-Brooks Co., Kenora, Ontario

liquor from (3) is pumped through the pipe (8). The rosin soap which is contained in the liquor may be allowed to settle out in the vessel (10).

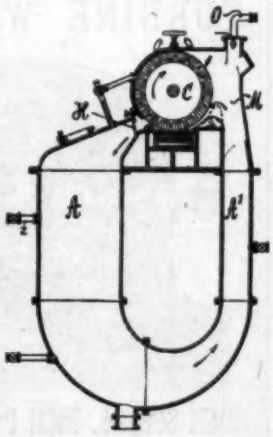
A pipe is connected to the cover of the digester (3). This pipe line, seen at (20) in the figure, is furnished with a control valve (11). This line leads to the container (12). The vapors which are evolved during the digestion of the stock in (3) are led through this pipe and in this way the volatile constituents of the wood are recovered, being precipitated in the container (12). The oily matter which is obtained in this manner separates into layers in this container in accordance to the specific weights of the ingredients, and each layer may be separately removed by means of a series of cocks (13), located at different heights in the container.

The digester is also provided with the customary pulp outlet (14), which is closed with a cover during the digestion process. The pulp is removed through this opening and is converted into paper. The arrangement of apparatus used for this purpose is shown to the left of the illustration. The pulp falls into an agitating vat (15) and from that apparatus it is sent to a sifting mill (16). This mill is made in such a manner that the pulp is first introduced into a grinding device, and from that part of the apparatus it passes into a sifting or screening device, through which the particles of the wood that have been finely enough comminuted are forced by means of centrifugal force, while the coarser particles are left behind and are discharged back again through the gutter (17) into the agitating vat (15). The particles of paper stock which were fine enough to go through the screens are then brought upon a paper-making machine (18) of the cylinder type and manufactured into paper, as seen at (19).

Pulp Beater

THE beater which is illustrated in the accompanying cut is patented in German Patent No. 400,861. The beater roll and bedplate, in other words, the active beating portion of the beater, are enclosed in an air-tight chamber (M), which is located over the stock container (A). The chamber (M) is connected with (A) by means of a wide pipe (A′) through which the stock rises. In order to circulate the pulp around this type of beater, beater pumps must be employed. The type of beater patented herein differs from all other types in the fact that a pump is not required to circulate the stock. The vacuum in the chamber (M) is what causes the pulp and water mixture to rise in the wide pipe (A′).

The method of beating pulp in the beater is as follows: The beater roll (C) is set into motion, the hollander trough (A) is partially filled with water and stock and the connection (O) with the suction pump is opened and the air is partially sucked out of the beating chamber. The air pressure immediately affects the stock in the beater trough and the flap valve (H) is closed at the same time, while the stock is sucked into the tube (A′) and finally reaches the beater chamber (M). The stock is subjected to the ordinary beating between the knives on the beater roll and the bedplate, and from this point the stock is pushed through the opening on the front side of the roll, whereat the valve (H) opens, due to the sudden impact of liquid and stock against it.



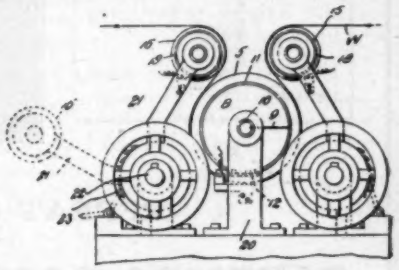
As the air is partially removed from the spaces between the beater knives by the suction of the pump, the same becomes filled with stock, whereby the capacity of beating is increased and a more rapid revolution of the stock takes place. After the stock passes the bedplate it falls into the trough (A) as has been described, and the cycle of operations is repeated. The loading of the beater with pulp is continuous until sufficient stock has been added thereto.

The speed of rotation of the beater roll is from twenty to thirty meters per second. Any fluid which has the specific gravity of water can be raised ten meters by a complete vacuum. When only a fifth of this suction effect is used, the contents of the beater may be raised only two meters. There is no difficulty encountered in making the suction produced by the pump raise the stock and liquor and effect continuous circulation of the same through the beater.

The advantages of operating the beater without a pump may be seen from the following. The capacity of the beater is 5000 liters, the beater roll is 1250 millimeters wide, and it has a diameter of 1250 millimeters. There are ninety knives separated by a distance of 34 millimeters, and the knives are five millimeters thick. The beater roll rotates at a speed of 150 r. p. m. It is calculated that when beating a stock with a density of ten per cent, about 25,000 kilograms of the mixture are treated every minute by the beater. In other words, the entire contents of the beaters are circulated five times in the minute.

Determining Moisture in Paper Web

UNITED STATES Patent No. 1,509,869 is concerned with an instrument which is used in the determination of the percentage of moisture in a paper web. The moisture content is determined automatically, while the web is moving during the course of its manufacture. The instrument consists of means for supplying heat to the web and contains certain devices which are sensitive to the web before and after it is heated. An indicator is controlled by the devices which are sensitive to heat, so that the moisture in it is indicated.



Treatment of Fibrous Matter for Paper

STRAW is treated in a process of paper making by subjecting it to the action of a chemical liquor, which contains eight parts by weight of caustic lime slaked and diluted with paper to a paste, one to four parts by weight of a mineral oil, such as petroleum, and from four to eight parts of carbonate of soda. This process is patented in United States Patent No. 1,510,070. Abstract No. 102, Paper Industry.

Role of Electricity in Sizing of Paper

THE sizing of paper consists in covering to a greater or less extent the surface of the fibers with minute particles of rosin. The degree of the sizing is determined not by the quantity of rosin actually present, but by the quantity of finely divided rosin retained by the fibers during the formation of the sheet on the wire. The retention of these fine particles is not due to filtration or chemical affinity, but to the mutual attraction of two bodies suspended in an electrolyte and carrying surface charges of opposite sign. Efficient sizing therefore depends on the p_H of the backwater, the isoelectric points of rosin and cellulose being sufficiently far apart for there to be a range of p_H values within which the above condition of attraction is fulfilled. Outside of this range, the cellulose and rosin will carry charges of like sign, and will therefore repel each other, with the result that sizing is impossible.

The role of aluminum sulphate is to neutralize by hydrolysis the natural alkalinity of the water and to provide by ionization sulphate ions and aluminum ions which serve to repress the harmful effects of a slight excess of hydrogen or hydroxyl ions, respectively, the latter effect being more frequent. In addition, the deposition of alumina on the fiber contributes some slight sizing effect.

The function of papermaker's alum is therefore to adjust the p_H value of the water in the pulp suspension. Acids serve equally as well, but in practice it is not possible to prevent harmful variations of the p_H value if acid alone is used. Experimental evidence is adduced in support of this theory, and

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ILLUSTRATION shows two Zaremba Triple Effect Evaporators in the West Virginia Pulp & Paper Company's Soda Mill at Tyrone, Pa. One Triple was installed in 1911, the other in 1916.

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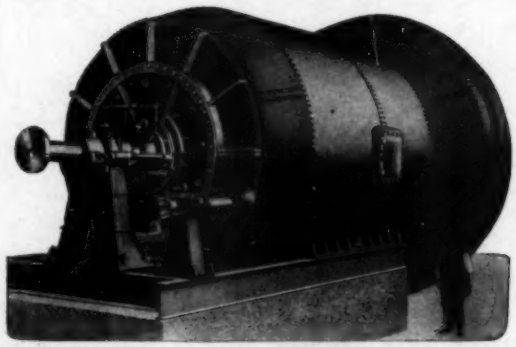

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it is shown that in practice weak sizing effects may usually be traced to an increased alkalinity of the water.

A considerable saving in alum may be effected by using sulphuric acid to neutralize the natural alkalinity of water. An efficient indication of the p_H value of the water, which leaves the wire on the paper-making machine, may be obtained by testing it with each of two indicators, methyl red and sodium alizar insulphonate. If the same tint is obtained with these two indicators, the water has a suitable p_H value, and good results will be obtained. If the methyl red is more red, or more yellow, than the sodium alizarinsulphonate, the water is too acid, or too alkaline, respectively.

This important and interesting article is printed in full in Chimie et Industrie, Special Number, 1924, 567-573.

Making Fiber for Paper

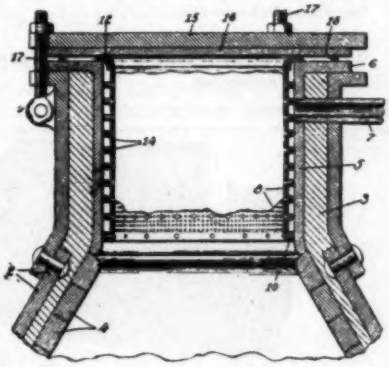
A PATENT has been issued on a new process for making paper from cereal straw. The process consists in treating this straw under pressure with magnesium monosulphite in a strong solution. The liquor is then removed after the treatment is completed and the fiber is suspended in water to form a flowable pulp and this pulp is then repeatedly treated with hot sulphurous acid gas. This action results in a further solution and removal of organic matter, with the result that a readily bleaching strong pulp is obtained.

The details of this process are given in United States Patent No. 1,511,664.

Digester Strainer

THE apparatus which is seen in the accompanying illustration has been patented in England. It is employed as a strainer for the blowoff in sulphate pulp digesters.

During the cooking of sulphate pulp it is necessary at times to open the discharge pipe that leads from the upper part of the digester in order to draw off some of the liquor, and in this way it is possible to relieve the pressure which is engendered in the digester by the liberation of sulphur dioxide. It is common practice to locate the strainer in the neck of the digester in order to prevent the chips and other solid matter from being forced into the discharge pipe by the rush of liquor out of the digester.



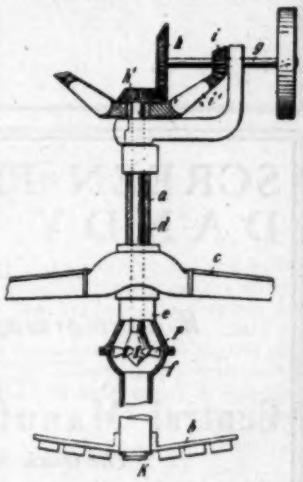
It is claimed that such strainers are the cause of a great deal of trouble, due to the fact that they are liable to clog up with chips. For this reason it is customary to connect live steam to the relief side of the strainer, so that when the strainer has become plugged steam can be forced through it to clean it. This procedure has the effect of interrupting the operation of drawing off the liquor from the digester, and hence it is impossible to use this type of strainer in conjunction with an automatic mechanism for relieving pressure in the cooker.

In the illustration the shell of the digester is seen at (2), the grout at (3) and the acid-proof lining at (4). A collar (5) is fitted into the neck of the cooker. This is made of some material which is adapted to resist the action of the acid employed in the pulp-cooking operation. Bronze is suitable for this purpose. This collar has a cylindrical part that forms the inner wall of the neck of the digester, and a flange (6) that overlies the upper end of the grout. A discharge pipe (7) projects through the casing (2) and is threaded into the collar (5).

The strainer is located in the chamber in the interior of the collar (5). The strainer is formed of a hollow cylindrical screen (8), which is made of lead and is perforated so as to permit the escape of liquids and gases through it. The screen is smaller in diameter than the collar (5), so that there is a small annular space between the strainer and the sides of the collar. A ring (10) which is made of brass or other suitable metal is riveted to the lower end of the screen (8) and serves the double purpose of forming a flange to strengthen this end of the screen, and also of closing the lower end of the annular space between the collar and screen and preventing the entrance of chips and other solid material into the said space. The upper end of the screen has a collar or flange member (12) riveted to it, this collar resting on the member (6) and supporting the screen in the neck of the digester.

Stirring Device

THE device which is seen in the accompanying illustration and which is patented in the German Patent No. 399,735 is an agitating apparatus which has special adaptation for keeping suspended particles in motion in a liquid, particularly in the operation of bleaching paper stock.

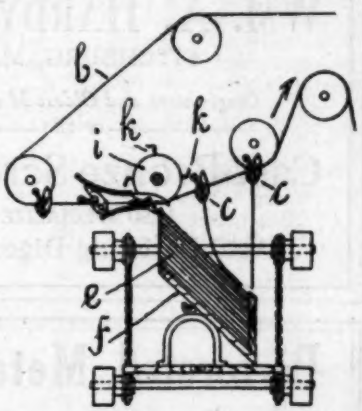


A shaft (a) is arranged within any suitable container. This shaft holds a distributing device (c), a tube (e), and the stirrer arm (b). The shaft (a) is hollow and inside of it there is another shaft (d), to which a propeller (p) is connected. At this point the tube (e) widens out as seen at (f). The two shafts (a) and (d) are driven by the common shaft (g) by means of the gear arrangement (i), (i') and (h), (h').

In this way it is possible to rotate the middle shaft (d) at the requisite number of revolutions per minute, so that the material is lifted through the tube (e) to the distributing device (c).

Paper Web Dryer

THE apparatus seen in the accompanying illustration is a dryer for moist paper webs. It is patented in German Patent No. 399,928. This apparatus consists of an arrangement of conveying devices provided with clamps which hold the paper web and lift the same from a table, and then after carrying the web through the dryer allow it to fall off on another table. The lifting of the paper web is automatic.



In the figure the chain conveyor (b) is seen provided with clamps (c) and a table (f) which is adjustable and which is inclined at the proper angle.

The sheets of paper which are to be dried are placed on this table and the clamps which are attached to the traveling chain conveyor take hold of them and carry them to the dryer.

Sizing of Kraft Papers

THE manufacture of Kraft papers is assuming increasing importance and one of the most interesting matters concerned with the manufacturing process is the sizing of the paper. There are quite a number of factors that enter into this part of the process. In the first place, as to the amount of rosin that is required to size the paper, it is impossible to state definitely what this is, as too many factors are involved in the operation, but it is safe to say that the proportion of rosin necessary is less than in the case of sulphite and rag

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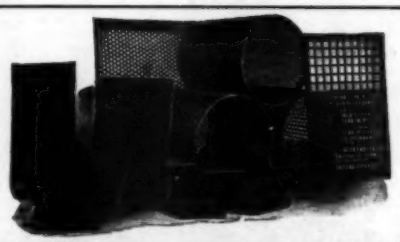

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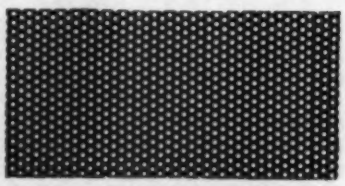
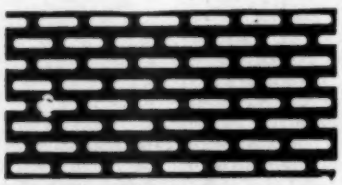
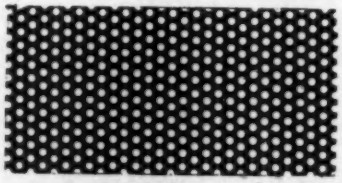
Perforated Metal Screens for Pulp and Paper Mills



.065 inch round



⅛ x ½" Slots



3/32 inch round

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papers. The amount varies from as low as one-half of one per cent to three per cent and more in special cases. The grade known as twisting paper requires very little size, while wrapping paper requires a little more, and such grades as tape paper require considerable.

The results that are obtained with the use of a high free rosin size and a low free rosin size will depend very largely on individual mill conditions, such as the beating of the stock, the quality of the water employed, etc. It may be said that the use of low free rosin size or even of a neutral size will be accompanied with less difficulty than the use of a high free rosin size.

The method of application of the size is also of importance. Some mills obtain good results by adding the low free rosin size directly to the beater in the form of thick paste, but it must be held that under ordinary circumstances it is preferable to use an emulsion of the size. This is absolutely necessary when using a high free rosin size.

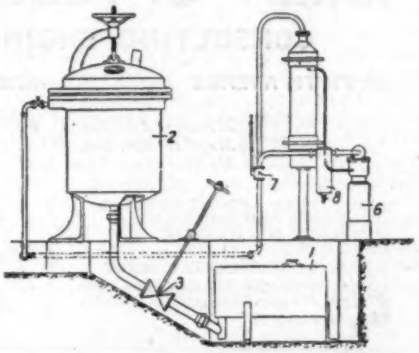
There are many other factors that influence the results that are obtained in the sizing of Kraft papers. These are, for example, the hardness of the water, the effects of salts that are retained in poorly washed sulphate pulp, the effect of temperature, of the proper order of the addition of size and alum, and the like. It is customary to add the rosin size first and then the alum, but in the case of hard water this may have to be modified and part of the alum added first. It is generally accepted that temperatures over 100 degrees F. are likely to be dangerous. This trouble of overheating is, however, not so common in the case of Kraft papers as with some other grades which are beaten longer.

In fine, the sizing of Kraft papers requires a source of uniformly dependable rosin size which is correct both from a chemical and a physical standpoint.

For further details see the original article in The World's Paper Trade Review, Sept. 5, 1924.

Impregnating Paper

THE illustration shows an apparatus which is employed in the impregnation of paper and which is the subject of a British patent. The device is used for the impregnation of paper, cardboard or fibrous materials, such as the tubes employed in spinning, with substances such as synthetic resins. The materials are placed in a stove (2) and are dried under a vacuum. Impregnating material is drawn into the stove from a vessel (1), and is allowed to impregnate the materials either under a vacuum or pressure. After the impregnating substance has been returned to the vessel (1), the stove (2) is heated to drive off the solvent, if necessary, and to polymerize the impregnating substance and so render the materials impermeable. In certain cases air may be admitted to oxidize the impregnating substance. A compressor (6) may be used to provide pressure or a vacuum pump may be used to produce a vacuum. A condenser and a scouring device (8) are included in the plant.



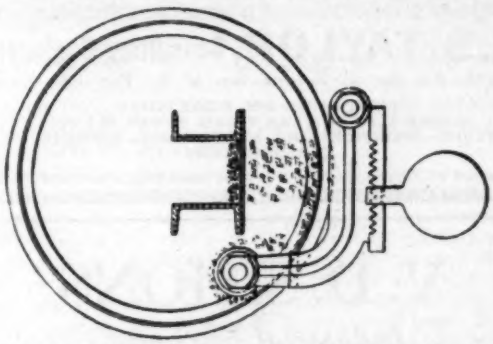
Screening Paper Stock

THE apparatus which is the subject of this patent is for the purpose of screening paper stock. This apparatus consists of a rotary screen drum the interior of which is subdivided longitudinally into separate screening compartments. The stock that is delivered to the inlet end of the apparatus may thus be screened, lifted and dropped by the rotation of the drum. The means that are provided for advancing the stock through the apparatus consist of a repository for the dropped stock with separate passages, one for each screening compartment, which are adapted to advance the residue from each screening operation and deliver it to the next or more advanced compartment of the drum.

This apparatus is patented in United States Patent No. 1,511,759.

Treating Paper Stock

A BRITISH patent has been issued on an apparatus for dewatering and thickening paper stock, which apparatus is seen in the accompanying figure. Thin stock is fed to the inside of a rotating perforated drum. Because of the rotation, the stock tends to be carried up the side and roll back. The agitation which is set up assists in draining out the water. The partly dewatered stock is then subjected to pressure by means of the roller. It is frequently desirable to treat in this manner stock that is to be refined in order to control the fiber length of the product from the refiner, as this varies with the consistency of the stock fed. A thin supply frequently tends to produce long fibers, while a thick stock may give short fibers.



Mechanical Pulp in Paper

IN A RECENT issue of the German paper journal, Zellstoff und Papier, there is described a method for the estimation of the mechanical wood pulp in paper which does not take as much time to carry out as the standard pholorglucin test. The method consists in reducing the paper to the condition of a dust by means of a file or steel brush. One gram of this paper dust is then placed in a distillation flask in a mixture of ten cubic centimeters of hydrochloric acid (1.19 specific gravity) with ninety cubic centimeters of water. The temperature of the flask and contents is maintained at 20 degrees C and the flask is shaken for two minutes. Then fifteen cubic centimeters of a tenth normal solution of potassium permanganate are added and allowed completely to discolor. The time that is required for the discoloration is noted.

The following results were obtained in a series of experiments:

Ground Wood In Per Cent	Sulphite In Per Cent	Decoloration Time in Seconds
100	0	60
80	20	72
75	25	74
70	30	76
60	40	82
50	50	88
40	60	95
30	70	100
20	80	108
0	100	120

It is very important in making this test to maintain the temperature constant at 20 degrees C and the permanganate must be added all at once.

As far as the value of the method in practical work is concerned, there may be, of course, some question due to the fact that only a few seconds is equivalent to from ten to fifteen per cent of mechanical wood pulp. This may readily be seen from the above tabulation. But the method is a very rapid one and it may serve the purpose when it is desired to arrive at a rough estimation of the amount of mechanical wood pulp present in the paper. At any rate, when it is used, the greatest care must be taken to see that the temperature does not vary, as, if it does, very great errors will be introduced into the analysis and, in fact, the results will be practically worthless.

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Designs
Specifications
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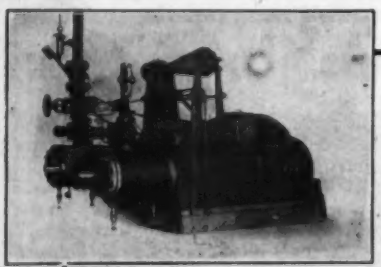

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IT HAS been clearly apparent that the approaching national elections have had a quieting influence on the paper market. Buyers, and more especially the important buyers who absorb paper in large tonnage, have been somewhat cautious in their operations in the last several weeks. While sentiment in the paper trade and among consumers is very well fixed as to what the results of the election will be, at the same time the political situation this year is fraught with so much possibility that the selection of a Chief Executive of the nation may not be in accordance with expectations that buyers of paper have adopted a cautious policy until assured of what the political future is likely to be.

At the same time, business in paper has developed in a fairly consistent manner and in comparatively good volume. Notwithstanding the check put on activity in the trade by the hesitancy of large consumers to stock up pending the outcome of the election, demand has kept up in a way to give most mills sufficient work to warrant production on a broad scale. Some kinds of paper are in an active market position, demand for same has shown a steady increase and the movement into consuming channels is far greater than what was regarded as normal in pre-war days. Other descriptions of paper are enjoying fair market activity; there is much room for improvement, to be sure, but demand is broad enough to keep mills humming and to lead to a steady flow of supplies from manufacturing to consuming centers.

The outlook is particularly bright. On all sides are signs that business generally is merely waiting for the political horizon to clear before starting on a period of industrial and commercial activity the equal of which has seldom been witnessed in the United States. Confidence abounds that this country is on the threshold of bountiful prosperity. Conditions in Europe—political and industrial—have reached that degree of stabilization where the European nations are about ready to enter the world's markets and purchase the tremendous amounts of various commodities, manufactured and raw, which they are sorely in need of and have been wanting since the war. Obviously, the United States is going to get its full share of this foreign business, and that is just what is required to put business in this country in a booming condition. If our manufacturers can secure an export market for the 10 to 25 per cent of their production which constitutes the excess output of our factories, or at least the excess capacity of our mills and manufacturing establishments, thus removing this production from our domestic markets, then a boom in business is insured.

Paper manufacturers and merchants are quite confident in their views concerning the outlook, and are bullish in their opinions of what the next few months will bring forth in the way of business. Since the summer demand for paper has increased appreciably. The rise in newsprint consumption has been particularly gratifying. There also has been a steady gain in demand for writing, book, tissue, wrapping and specialty papers and for boxboard. The upward tendency in prices of some classes of paper—caused in the main by advances in raw material—has, instead of frightening buyers, brought them into the market for increased amounts of paper. At the same time, buying has been of ultra-conservative character. Few consumers have laid in stocks to amount to anything; nearly all of the buying has been against direct requirements, and even paper jobbers have been reluctant to order from mills other than in ample volume to cover immediate commitments to their own customers.

There was a large increase in paper production in the United States in August as compared with the preceding month, according to the monthly statistical summary of the American Paper and Pulp Association in co-operation with affiliated organizations. A total of 442,654 net tons of paper and board of all kinds was produced in August by domestic plants, contrasted with 400,756 tons in July, representing a gain of 7 per cent. Mill stocks of paper were about the same at the end of August, amounting to 243,097 tons of all grades, as at the end of July, when stocks aggregated 243,433 tons, while shipments from mills during August totaled 449,634 tons, against 406,122 tons in July.

The monthly report on the boxboard industry compiled by the Department of Commerce put the production of board of all kinds in the United States in August at 186,340 net tons, showing a marked gain over the preceding month and constituting the largest single month's output of board thus far this year, the next largest being 176,293 tons last March. Board mills of the country operated 7,852,077 inch hours during August, compared with 141,364 inch hours in July, while orders received in August totaled 202,542 tons of board, contrasted with 155,871 tons in the preceding month. Unfilled orders at the end of August called for a total of 118,492 tons of board, against 100,837 tons at the end of July.

Analyzing conditions in the fine paper field, Emmet Hay Naylor, secretary of the Writing Paper Manufacturers' Association, stated a few days ago: "The fine paper market has shown improvement. Many of the mills are again operating normally. While the price of pulp has been easy during the summer, it has recently shown a steady advance and will cost more for the rest of the year, whereas the price of rags, both old and new, continues high and the supply is limited. The stock of fine paper on hand with the printers as well as with the merchants is below normal, whereas the mills have only a normal amount of finished stock, so that when demand picks up this fall, as it is rapidly doing, the mills will have difficulty in supplying all needs. It is anticipated that this winter will see active business for the mills, merchants and printers as regards all grades of fine papers."

One of the important developments in the paper market in October was the announcement of a reduction in the price of newsprint of $3 per ton by the International Paper Company and several of the Canadian companies, to become effective on contract deliveries after January 1 next. This cut in print paper prices was expected rather generally in the trade and caused little surprise or disturbance. Rumors had been afloat for some time that the leading manufacturers were preparing to reduce quotations for the new year, and it was regarded among most paper men as a wise move because it is believed that the lower price will effect a curtailment of foreign competition. The new contract basis on standard newsprint in rolls after the first of the year will be 3.50 cents per pound or $70 a ton f. o. b. mills.

Newsprint is in good and steady demand at present, not only from contract buyers but also from transient purchasers. Publishers all over the country are printing big issues and are gradually increasing their consumption of print paper. Book paper is in fairly active demand, contract mills being well fixed with orders and those depending on transient buying securing a moderate volume of business. Prices are quotably steady, with very little or no change. Coarse papers are moving in consistent fashion and in normal tonnage, demand for tissue having shown considerable improvement. Fine papers are in steady call and firm in price; in fact, the trend of the market is upward decidedly. Building papers are in unusually good demand for this time of the year, and high raw material costs are holding up prices. Specialties are enjoying fair activity and mostly display a rising price trend. Boxboards are in rather routine demand after experiencing a spurt of buying in October which carried prices in the East up to a basic level of $50 per ton f. o. b. New York for plain chipboard, but since quotations have eased to around a $40 level.

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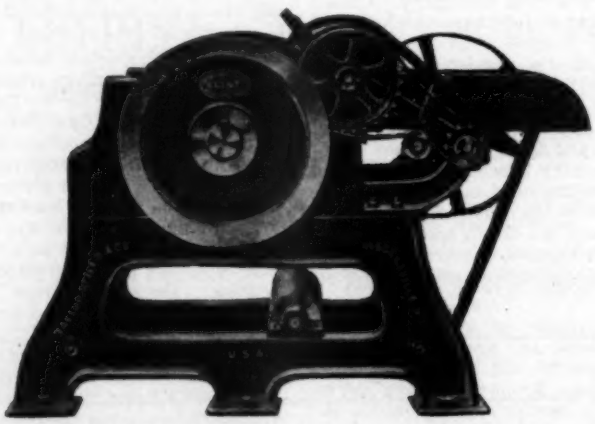

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Domestic Raw Materials

Papermaking Rags

Demand for papermaking rags is somewhat spotty. A fairly good movement of most grades is in progress toward mills, and the cheapest class or roofing stock has shown decided improvement in activity and in price during the past few days, but on the whole consumers are buying in a cautious manner and principally to cover direct needs. The tone of the market is fairly firm. Very little or no recession has been noted in prices, and some grades have shown an upturn in value, this being particularly true as regards roofing stock —the cheapest class of papermaking rags, and new cotton cuttings—the highest-priced grades.

Most assuredly, there are numerous strong factors in the rag situation at present. Reports state that it is growing increasingly difficult to purchase fresh supplies in Europe at prices comparing favorably with market levels in the United States. Apparently European dealers are well fixed financially and are in a position where they can well afford to hold stocks for the prices wanted; also, it is asserted that rag supplies throughout Europe are much smaller than has been the case in the past several years and that this stronger statistical position prompts dealers to want more for their stocks. There are no indications of any real shortage in Europe, but, on the other hand, supplies are reduced to a level where there is a strengthening influence on rag values, and some grades are anything but easy to locate in sizeable volume.

The domestic supply of papermaking rags is low. Despite the attractive prices prevailing for some time past collections through the country are not, from all signs, productive of normal amounts of most kinds of rags, and dealers are carrying smaller stocks than they have usually in the past. This is a reflection in part of the fairly heavy consumption of rags during the last year or so. Roofing paper mills have used by far a greater tonnage of rag stock in recent months than ever in their history, and writing paper manufacturers have been consuming on a more or less steady rate substantial quantities, against which condition has been a low production of many kinds of rags, new cuttings especially. Another factor in the situation is the large lots of rags consumed in other than the paper industry. Owing to the high price of cotton and cotton waste, the use of rags for wipers and for cotton substitutes has increased tremendously. The larger number of automobiles in the country also has reduced the available supply of cotton rags because nearly every individual owner of a car saves the household rags for wiping and polishing the family auto, so that the rag collector has secured fewer rags in his house to house canvass.

Imports of papermaking rags from abroad continue in fairly large volume. There is not the tonnage coming into the country that there was a few months ago but importers nevertheless are handling amounts which, in the long run, are larger than the importations in pre-war days. Prices abroad, however, are very firm, and in freqent instances the figures asked by European dealers are beyond a parity with market levels here. The markets abroad and in the United States have been brought so closely together by the big business transacted since the war that the moment any single grade of rags shows a price uptrend in the American market dealers in Europe quickly learn of it and at once raise their prices in like proportion, and ofttimes in greater proportion. As an illustration of the heavy movement of rags from across the Atlantic, latest Government statistics show that in the first eight months of 1924 imports of papermaking rags into the United States totaled 304,028,529 pounds, contrasted with 256,852,741 pounds imported in the same period last year.

New cuttings of all grades display a strong price tone, and any changes that have developed have been almost without exception in an upward direction. Production of cuttings is still below normal, and dealers, having limited stocks on hand and encountering trouble replacing the rags sold, are holding for high prices. No. 1 white shirt cuttings are quoted at 15.50 to 16 cents a pound at dealers' shipping points, fancy shirt cuttings at 10 to 10.50 cents, washables at 9 to 9.25 cents, and unbleached muslins at 14 to 14.50 cents. Blue overall cuttings have sold at 11.50 cents at dealers' points, and new light silesias at 11.25 cents.

Roofing rags jumped in price some $2 to $4 a ton during the last few days of October. Several large consumers came into the market for fairly large lots and buying on their part ran prices up. The tone at the moment is exceedingly firm, and many in the trade predict a sharp rise in roofing stock before the end of the year, some expecting a three-cent level will be reached by the market. No. 1 roofing rags are selling at 2.40 to 2.60 cents a pound at dealers' shipping points, and No. 2 stock at 2.20 to 2.40 cents, while foreign dark colored cottons have brought 2.40 cents ex dock New York.

Old white rags and thirds and blues are about steady in price but are in slow demand. Repacked No. 1 whites are quoted at 7.50 to 8 cents a pound at dealers' points, and No. 2 repacked at 5 to 5.50 cents.

Average quotations f. o. b. shipping points and ex dock New York follow:

New stock—	New York and Chicago
White shirt cuttings, No. 1	15.50-16.00
White shirt cuttings, No. 2	10.50-11.00
Fancy shirt cuttings	10.00-10.50
Washables, No. 1	9.00- 9.25
Unbleached muslins	14.00-14.50
White lawns	13.50-14.00
Overall cuttings, blue	11.00-11.50
Black silesias	6.25- 6.50
Light flannelettes	12.25-12.50
Canton flannels, bleached	13.50-13.75
Canton flannels, unbleached	12.25-12.50
Shoe cuttings, bleached	12.25-12.75
Shoe cuttings, unbleached	11.00-11.50
Light silesias	11.25-11.50
O. D. khaki cuttings	6.75- 7.00
Mixed khaki cuttings	6.00- 6.50
Corduroy cuttings	6.00- 6.25
Cottonade cuttings	5.25- 5.50
Linens, No. 1 white, foreign	16.50-17.50
Light prints, foreign	7.50- 8.00
Old stock—	
Whites, No. 1, repacked	7.50- 8.00
Whites, No. 2, repacked	5.00- 5.50
Whites, house soiled	3.50- 3.75
Whites, street soiled	3.25- 3.50
Lace curtains	5.50- 6.00
Thirds and blues, rough	3.00- 3.25
Thirds and blues, repacked	3.75- 4.25
Black stockings	4.25- 4.50
Cotton canvas, No. 1	5.00- 5.50
White cotton batting	4.50- 4.75
Roofing, No. 1	2.40- 2.60
Roofing, No. 2	2.20- 2.40
Dark colored cottons, foreign	2.35- 2.45
Blue linens, foreign	5.50- 6.00
Gray linens, foreign	6.50- 7.00
White linens, foreign	11.00-12.00
Light prints, extra, foreign	5.00- 5.25

Rope and Bagging

Old manila rope is one of the firmest items in the list of raw materials consumed by paper mills. This article is in limited supply, the domestic production particularly being on

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a subnormal scale, and dealers are demanding comparatively high prices; moreover, paper manufacturers seem in sufficient need of old rope to cause them to meet the prices quoted and are gradually advancing their buying rates. Domestic old manila rope of No. 1 quality has sold at 6.75 to 7 cents a pound f. o. b. dealers' shipping points. Most sellers are now asking 7 cents and it is acknowledged by consumers that not much rope is available below this figure. Foreign old manila rope is quoted from 6.50 to 6.75 cents a pound ex dock New York and is also meeting with a good demand with prices exhibiting a rising tendency. Strings have strengthened in price slightly to where dealers ask 1.40 to 1.60 cents a pound for mixed strings, and 2.25 to 2.50 cents for sisal strings.

Offers of old bagging are rather small in volume. Dealers assert it is difficult to find usual amount of scrap burlap, and that prices at the supply source are high. No. 1 scrap bagging of a quality suitable for particular paper mills is fetching around 1.75 cents a pound f. o. b. shipping points, and roofing bagging is selling freely at 1.30 cents and higher, reports stating that some mills have paid 1.40 cents for roofing bagging. Gunny is firm and in steady movement.

F. o. b. shipping point and ex dock New York quotations are as follows:

	New York and Chicago
Gunny, No. 1, domestic	2.15-2.25
Gunny, No. 1, foreign	2.10-2.20
Scrap bagging, No. 1	1.60-1.80
Roofing bagging	1.30-1.40
Wool tares, heavy	1.85-2.00
Wool tares, light	1.75-1.85
Manila rope, No. 1, foreign	6.50-6.75
Manila rope, No. 1, domestic	6.75-7.00
Sisal strings	2.25-2.50
Mixed strings	1.40-1.60

Old Paper

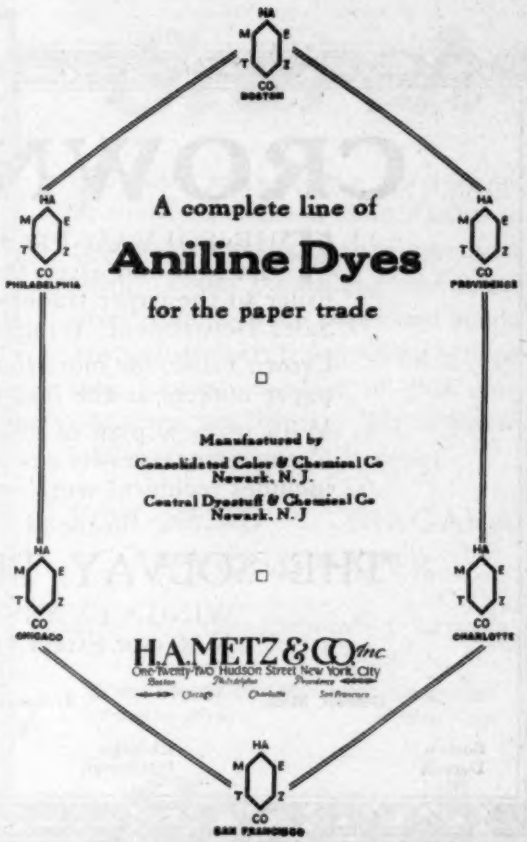
Notwithstanding that October was a very quiet period for the old paper market, which is unusual because demand during that month usually is quite brisk, the market at present appears to be on the verge of recording appreciable price advances under a larger turnover of business. In other words, there are numerous indications that after the election consumers will come more actively into evidence as buyers, and that if they buy in the amounts they are expected to values will score a rise. The theory advanced by dealers is that mills have bought so sparingly in recent weeks their stocks must be down unusually low, and that if business in board and paper keeps up as it has been it will be necessary for manufacturers to increase their purchasing of waste paper, and that any broadening of the buying movement will result almost immediately in an upturn in prices because of the reduced collections and the small stocks in the hands of packers and collectors.

It is contended generally that old paper prices on prevailing levels afford scant room for profit for the dealer. Labor costs, it is said, have increased to such an extent that it is next to impossible to realize a fair return in collecting, sorting, baling and shipping material at present market values, and dealers therefore argue that prices will not stay at current levels if the demand shows the least increase.

Shavings are quoted at 3.50 to 3.75 cents per pound, depending on quality of packing, f. o. b. New York and Chicago, for No. 1 hard white, and 2.75 to 3 cents for No. 1 soft white shavings. Ledger stock has eased off to about 1.55 cents a pound at shipping points, and No. 1 heavy books have receded in price to between 1.30 and 1.50 cents. Folded news is selling in New York at 75 cents and even down to 70 cents f. o. b. that city, and No. 1 mixed paper at 55 cents, whereas dealers in the West quote somewhat higher on these grades.

F. o. b. shipping point quotations are as follows:

	New York and Chicago
Hard white shavings, No. 1	3.50-3.75
Hard white shavings, No. 2	3.00-3.25
Soft white shavings	2.75-3.00
Colored shavings	1.40-1.60
Heavy book, No. 1	1.30-1.50
Crumpled book, No. 1	1.05-1.15
Ledger stock	1.50-1.70
Kraft, No. 1	1.70-1.85


A complete line of
Aniline Dyes
for the paper trade
Manufactured by
Consolidated Color & Chemical Co
Newark, N. J.
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H.A. METZ & CO Inc.
One Twenty-Two Hudson Street, New York City

Paper Stock
Now Is the Time to Buy Our Raw Materials
Out of the forty different kinds of paper stock graded in our many large warehouses, you are assured a steady, reliable source for procuring raw materials in practically every branch of paper making.
Having specialized for 35 years in this one field you can depend upon a clean, well-packed, uniform product throughout; fulfillment of delivery promises; and because of our output of 300 tons daily, big tonnage at all times.
Write us your wants and we'll gladly send further information.
Mendelson Bros. Paper Stock Co.
910 South Michigan Avenue, Chicago, Ill.
Long Distance Phones: Harrison 2040 and 5557.

CROWN FILLER

THE SOLVAY PROCESS COMPANY announces that, on and after January 1, 1925, sales of Crown Filler to the paper trade will be made direct through its Sales Department, Wing & Evans, Inc.

Crown Filler, for more than 25 years, has been known by paper makers as the leading filler on the market.

With its new plan of direct selling The Solvay Process Company assures its customers a complete service which includes technical work on paper makers' problems.

Please address inquiries to:

THE SOLVAY PROCESS COMPANY

WING & EVANS, Inc., Sales Department
40 Rector Street New York, N. Y.

Plants

Detroit, Mich. **Syracuse, New York** **Hutchinson, Kan.**

Branch Offices

Boston **Chicago** **Cincinnati** **Cleveland**
Detroit **Pittsburgh** **Indianapolis** **Syracuse**

MITTS & MERRILL GRAVITY FEED SHREDDER

Reduces Paper Stock

Magazines, books, old paper and boxboard, frozen or dried pulp laps run through the Mitts & Merrill Gravity Feed Shredder are reduced to particles which hydrate readily when put into the beaters.

Built in six sizes with spouts ranging from 18" to 45" wide

Reduces Costs

Because shredding in the Mitts & Merrill Gravity Feed Shredder expedites hydration in the beaters there is considerable saving made in power. Thus we see that the shredder here illustrated reduces costs while it is reducing paper stock.

We will be glad to furnish details upon request.

We also build a 100% efficient "Hog" to reduce pulp mill bark and wood refuse

MITTS & MERRILL 1013 Tilden St. SAGINAW, MICH.

Manilas, No. 1	.85- .95
White blank news	1.95-2.10
Over-issue news, No. 1	.85- .90
Folded news	.70- .85
Mill wrappings	.65- .75
Mixed paper, No. 1	.55- .65
Common paper	.40- .50

Chemical Pulp

Domestic producers of wood pulp continue to find foreign competition the main obstacle to larger business. Also, the market for pulp has been rather quiet recently. With a national election looming, papermakers have been hesitant about laying in stocks of pulp until assured of the political outlook, and such buying as has been done has been almost solely against direct requirements. The contract movement of pulp from domestic mills to consumers has kept up in a steady way but not much current business activity of any great consequence has been noted.

Quoted prices show a good deal of steadiness. No one seems to be exerting pressure on the market despite the slow demand; indications being that prices are on levels where manufacturers can ill afford to reduce them any farther; in fact, it is the contention of most producers that there is little profit to be made in making pulp at prevailing market values. Bleached sulphite is quoted from 3.75 to 4.25 cents a pound f. o. b. pulp mills, with some grades suitable for book paper manufacture reported available down to 3.50 cents. News grade sulphite, seemingly the most active kind of pulp in the market at present, is selling at 2.50 to 2.75 cents a pound at producing plants, and easy bleaching sulphite at close to 3 cents per pound. Domestic kraft pulp of No. 1 quality is quoted on a range of 2.75 to 3 cents at shipping points.

United States mills produced a total of 88,513 net tons of chemical pulp during August, compared with 84,950 tons in July, according to the monthly statistical report compiled by the American Paper and Pulp Association in co-operation with the U. S. Pulp Producers' Association. Mill stocks of chemical pulp at the end of August amounted to 25,722 tons, against 26,623 tons at the end of the preceding month.

F. o. b. pulp mill quotations are as follows:

Bleached sulphite	3.75-4.25
Easy bleaching sulphite	2.75-3.00
Unbleached sulphite, No. 1	2.60-2.85
News grade sulphite	2.50-2.75
Soda pulp, bleached	3.50-3.75
Mitscherlich, unbleached	3.25-3.75
Kraft, No. 1	2.75-3.00
Screenings, refined	1.50-1.75

Mechanical Pulp

While it is conceded generally that water conditions in numerous grinding districts have signally improved, thereby enabling manufacturers to increase their production of ground wood, it is stated that news print and board mills and other consumers are absorbing larger supplies and that one factor offsets the other, thus creating a firm market situation for mechanical pulp. Certainly, it is obvious little ground wood is laying around waiting for buyers to appear to remove it from the market; as a matter of fact, about all the supply that is offered by producers is meeting a ready sale, and, if anything, buyers are experiencing some difficulty in locating all the pulp desired. Illustrative of the statistical position, the American Paper and Pulp Association's report shows that despite a gain of something like 13,000 tons in domestic production during August over July, mill stocks of ground wood at the end of August were 6,000 tons less than at the close of July, showing supplies are moving into consuming channels steadily.

Domestic grinders quote around $32 a ton f.o.b. pulp mills for prime spruce ground wood for prompt shipment, quotations varying in accordance with the haul to consuming points and the air dry test. Canadian manufacturers are securing $30 a ton upward at pulp mills for freshly ground pulp, with some sales of stored ground wood reported in the Dominion down to $25. Scandinavian prices are so far beyond a parity with market levels here importers are unable to compete success-

(Continued on page 1485)

Starch

IT takes more than a good argument to make a manufacturer change his process. It requires actual proof. Today the leading manufacturers of high-grade paper and board are using starch for sizing where they formerly used an all-glue size, and they are turning out a better and stronger paper at less cost.

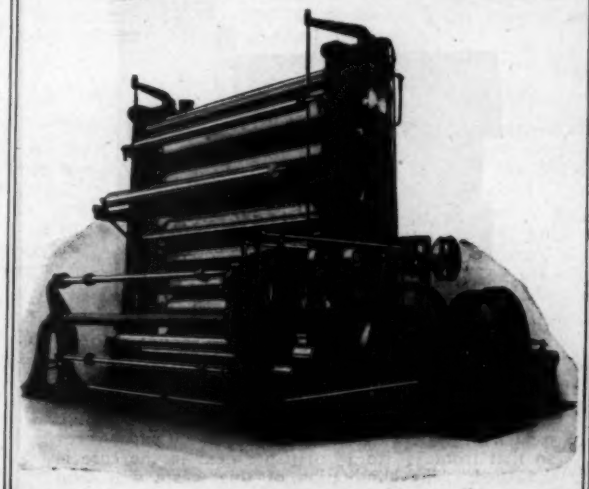
FOX HEAD NIAGARA SPECIAL PAPER

are the recommended brands.

CORN PRODUCTS REFINING COMPANY
17 Battery Place New York

Starch

NORWOOD SUPER CALENDERS



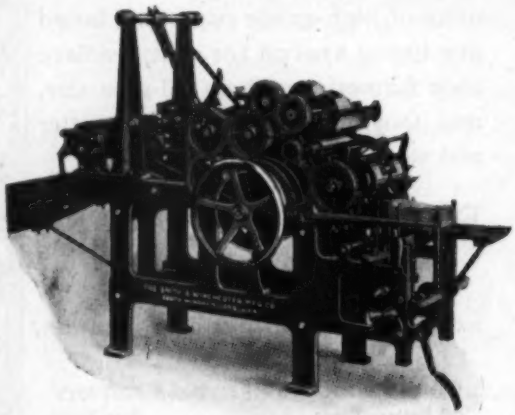
WE ARE SPECIALISTS IN

Paper Finishing Machinery

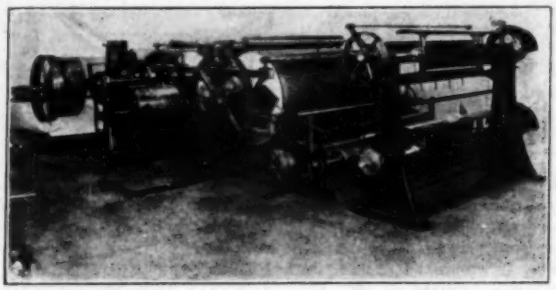
NORWOOD ENGINEERING CO.
FLORENCE, MASS., U. S. A.

Established 1828
The
Smith & Winchester Mfg. Co.
SOUTH WINDHAM, CONN.

Manufacturers of
Paper Making Machinery



Paper Bag Making Machinery



Latest Type Crepe Machine

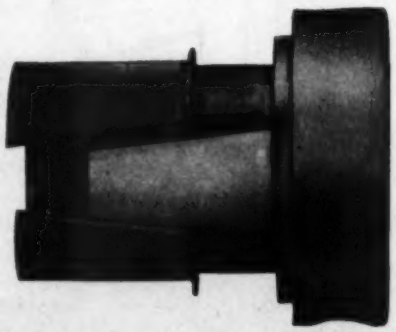
Dryer 48″ diameter by 84″ face.

Same machine can be built in any desired width and with any number of dryers. This machine is equipped with Drum Winder and Double Automatic Collapsing Reel.

Hudson-Sharp Machine Co.
Green Bay, Wis.

Selling Agents:
Gibbs-Brower Co., 261 Broadway, N. Y. C.;
166 Jackson Blvd., Chicago

THE ONEIDA CHUCK for use with Paper or Strawboard Cores



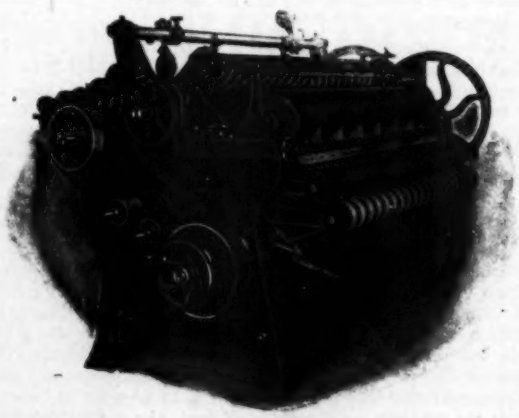
This chuck is so designed that it cannot split or damage the paper core on which the paper is wound and allows the roll to be run down to the last thickness of paper.

The conical or wedge-shaped chucks now commonly used with paper cores invariably split the paper cores so that from ½″ to 1″ of paper next to the core is damaged. The elimination of this waste will soon pay for the equipment on each machine.

Our Chuck allows the use of a cheap non-returnable paper core that once used can be thrown with the waste and sold.

Let us make up a trial set for you

ONEIDA CHUCK COMPANY
RHINELANDER, WISCONSIN
Eastern Agent, E. W. Myler, 366 Madison Ave., New York City
Telephone: Vanderbilt 6230



PAPER CUTTERS

Single, Duplex, and Diagonal

CUTTER KNIVES
PATENT TOP SLITTERS

Hamblet Machine Co.
LAWRENCE, MASS.

New Papers

Writing—	
White rag	20-45
White sulphite	11-30
Colored rag	16-40
Ledger—	
White rag	20-50
White sulphite	13-30
Colored sulphite	40-30
Colored rag	16-50
Bonds—	
White rag	19-45
White sulphite	10-30
Colored sulphite	10-30
Colored rag	16-50
Book—	
No. 1 S. & S. C.	6.75- 7.50
Machine finished	6.50- 7.25
English finished	6.75- 7.50
Coated and enameled	8.50-14.00
Lithographed, M. F.	9.00-15.00
Newsprint—	
Rolls, contract	3.50 ....
Rolls, transient	3.75- 4.00
Sheets	4.00- 4.25
Side runs	3.00- 3.25
Cover Stock—	
Coated, both sides	10.25
Coated, one side	10.15
Tissue—	
No. 1 white, 20x30	.75- .85
No. 2 white, 24x36	.70- .75
No. 1 manila, 24x36	.70- .75
Kraft	.90- 1.00
Wrapping—	
No. 1 Kraft	5.75- 6.50
No. 2 Kraft	5.25- 5.75
Boards—	New York and Chicago
Solid news	45.00-50.00
Straw	45.00-50.00
Plain chip	40.00-45.00
White coated chip	60.00-65.00
Manila coated chip	55.00-60.00
Binder's board	70.00-75.00

Mechanical Pulp

(Continued from page 1483)

fully, reports stating that prices from abroad are equivalent to between $38 and $40 a short ton ex dock New York.

Chemicals

The demand for papermaking chemicals is somewhat restricted. In so far as the movement on contracts is concerned, the market is fairly active but fresh demand is slow in developing, consumers evidently eking out their incoming supplies in a way enabling them to keep out of the market as buyers. No broad changes have occurred in prices. Casein is quoted between 10 and 11 cents a pound, duty paid on the imported product; soda ash at a flat basis of 1.38 cents per pound f.o.b. works, and caustic soda at 3.10 to 3.20 cents at works. Bleaching powder is steady at 1.90 to 2 cents per pound in domestic drums f.o.b. works.

Average quotations are as follows:

Alum, lump ammonia	3.25- 3.50
Alum, lump starch	3.75- 4.00
Blanc fixe, powdered	3.75- 4.00
Bleaching powder	1.90- 2.00
Brimstone (long ton, at mine)	18.00-20.00
Casein (duty paid)	10.00-11.00
Caustic soda, spot delivery	3.10- 3.20
China clay, domestic washed	12.00-15.00
China clay, foreign	15.00-20.00
Rosin, grade E	6.00
Satin white	2.00- 2.25
Soda ash, 58 per cent light (bags)	1.38
Starch, papermakers', in bags	3.40- 3.70
Talc (ton)	16.00-17.00

New Electric Hoist

A new electric monorail hoist designed to operate in a minimum headroom has been developed by the American Engineering Company, of Philadelphia, in half-ton and one-ton sizes. This hoist retains most of the outstanding features of the line of "Lo-Hed" hoists built by this company, but is smaller and lighter than the other members of the "Lo-Hed" family and is intended for general utility use where a light, handy hoist is needed.

The noteworthy feature of this new hoist is its ability to draw up the load hook until it almost touches the rail, which makes it available in places where, because of low headroom, no other hoist could be operated. It gives additional clearance and safety for bulky loads and makes it possible to pile materials higher than could be done in any other way, thus increasing the capacity of warehouses by utilizing the space almost to the ceilings.

Automatic holding and lowering brakes are provided and a safety device checks the hoist and throws off the current when the upper limit of travel is reached. High duty roller bearings and automatic lubrication give an efficiency of eighty per cent. A factor of safety of at least five makes overloads possible in emergency.

These hoists are furnished for either direct or alternating current. All working parts are completely accessible and the motor can be removed for repairs in a few minutes without touching the load on the hook.

General Electric Has Produced a Film

"The World of Paper," a film depicting the manufacture of paper from the earliest civilized era, has been completed by the General Electric Company and is ready for distribution.

The story goes back to the ancient civilization of Egypt, to the days of hieroglyphic chippings. Then, in rapid succession, are shown the Assyrian, Phoenician, Chinese, Greek and Roman contributions to the slowly developed art. This period includes the cuneiform scrip on tablets of clay, the tedious manufacture of papyrus, and the earliest forms of paper-making, originated by the Chinese.

The film then is devoted to modern paper making, taking the spectator through the largest paper mill in the world.

The wood pulp and sulphite processes are both shown, and there is a glimpse of the finished product in use in the press room of a metropolitan newspaper, as well as pictures of other forms of paper and products into which paper enters.

The Austin Company of California announces the removal of its San Francisco office to greatly enlarged quarters at 244 Kearney Street. Recently the headquarters staff of the Austin Company of California, at Los Angeles, moved into its new home at 777 East Washington Street, a private office building, two stories high, with beautiful architectural treatment. The company reports greatly increased business in the Bay District.

Producers of High Grade

BRIMSTONE

Prompt Shipments---Rail or Vessel---Car or Cargo Lots
Spot Purchases---Time Contracts

THE UNION SULPHUR COMPANY
33 RECTOR STREET, NEW YORK CITY
MINES: CALCASIEU PARISH, LOUISIANA

Bleached and Unbleached
SULPHITES
KRAFT PULPS

Foreign and Domestic
GROUND WOOD

PERKINS-GOODWIN CO.
NEW YORK
33 West 42nd St.

PAPER
PRINTING PAPER
OF
EVERY DESCRIPTION

EXPORTS

Paper exports from the United States in August, 1924, showed a gain in value over the preceding month, according to statistics compiled and issued by the Department of Commerce. Total exports of paper of all kinds in August amounted in value to $2,182,882, compared with $1,818,883 in July last, and with $2,173,646 in August, 1923. Exports of paper of all kinds for the first eight months of the current year totaled in value $16,395,974, against $17,431,196 in the corresponding period a year ago.

Exports of newsprint in August last amounted to 2,949,952 pounds, valued at $154,487, against 1,998,946 pounds, of a value of $109,275, exported in the same month last year. Book paper, not coated, exports in August were 1,792,852 pounds, valued at $203,409, contrasted with 2,248,910 pounds, of a value of $252,826, in the same month of 1923.

The United States exported wrapping paper, not including kraft, to the amount of 2,134,592 pounds, valued at $153,337, in August, compared with 1,930,235 pounds, of a value of $168,918, in August a year ago, and 27,574 pounds of kraft paper, valued at $3,208, against 101,049 pounds, of a value of $9,650, in the same month of 1923. Hanging paper exports in August totaled 1,016,695 yards, valued at $29,606, compared with 1,289,712 yards, of a value of $35,301, last year.

A considerable increase in exports of paper board was noted in August, total exports amounting to 7,774,781 pounds, valued at $276,548, compared with 6,416,992 pounds, of a value of $284,349, exported in the same month a year ago.

IMPORTS

Wood Pulp

The statistical position of imported wood pulp continues strong. Mills in Scandinavia are well sold up for the balance of this year; in many cases they are reported to have surprisingly little pulp to offer for shipment during the remainder of the present open water season, and quite a little buying has been done by American paper manufacturers of pulp for shipment from abroad in the spring of 1925. The quotations received from primary sources in Europe indicate the markets there are well maintained; that producers, excepting in rare cases, are bent on securing certain prices for pulp, and are enjoying enough demand to enable them to fully sustain prices.

At the same time there seems at the moment small likelihood of any sharp advance in pulp values during the rest of this year. American paper and board mills are conceded to have their requirements for a few months fairly well covered; they have bought abroad in good volume and now have supplies coming forward in a steady way, and are only occasionally entering the market to augment their stocks. About the only probability of an appreciable upturn in prices, it is said, is that a sudden demand of broad dimensions should develop for paper and board and thus bring manufacturers into evidence for big additional amounts of foreign pulp, in which case there is no doubt prices would jump sharply because conditions at the supply end are such that sellers would easily be able to get much higher rates for the pulp they have to sell.

Nevertheless, the opinion is general that pulp values will remain firm over the winter. The mere possibility of a strike in the Swedish paper and pulp industry at the beginning of the new year is a factor of sufficient importance to keep the market steady. Probably no one will know until the last minute whether or not the strike will materialize, yet the danger of a shutdown of Swedish pulp mills should serve to hold foreign pulp values on at least prevailing levels. There has been no sign of easiness in any part of the market except in some brands of German pulp. In certain instances importers with German connections have indicated willingness to shade prices on sulphite, but the concessions granted have been of little consequence and have not disturbed the equilibrium of the market in the least.

Imports of pulp into the United States keep up on a heavy scale. In fact, receipts during August almost established a new high record for the year thus far, being exceeded only by one other month—last February. Total imports of chemical pulp into this country in August amounted to 107,970 net tons, according to Government figures, contrasted with 102,361 tons in July, 78,416 tons in June, 73,969 tons in May, 56,256 tons in April, 77,402 tons in March, 110,932 tons in February and 79,097 tons in January. The total for the first eight months of this year was 686,403 net tons, giving a monthly average of 85,800 tons, compared with an average of 85,689 tons in the same period last year. Imports of mechanical pulp in August were 18,932 net tons, against 16,109 tons in July, and making a total of 126,783 tons for the first eight months of this year, giving a monthly average of 15,847 tons, against 21,640 tons in the corresponding time of 1923.

Bleached sulphite of No. 1 grade is quoted at 3.75 cents and up to beyond 4 cents a pound ex dock New York. In some cases importers are said to be offering prime bleached sulphite at a trifle below 3.75 cents, 3.65 cents being the figure mentioned. Strong prime unbleached sulphite is selling from 2.60 to 2.80 cents a pound ex dock New York, and easy bleaching sulphite at around 3 cents. Genuine unbleached Mitscherlich sulphite is quoted on a range of 2.85 to 3.25 cents, while ordinary Mitscherlich pulp is available at 2.60 cents ex dock New York and possibly at a shade less. Kraft pulp is in a firm quotable position. Swedish prime standard kraft is fetching 2.80 and 2.85 cents a pound on the dock at New York, and sales of special brands have been recorded up to 3 cents. Scandinavian ground wood is quoted at between $38 and $40 a ton ex dock New York.

Receipts at the port of New York in October and current market quotations ex dock New York follow:

Bleached sulphite, No. 1	3.75- 4.25
Unbleached sulphite, strong, No. 1	2.60- 2.80
Unbleached sulphite, No. 2	2.50- 2.65
Easy bleaching sulphite	2.90- 3.15
Mitscherlich unbleached, genuine	2.85- 3.25
Mitscherlich unbleached, ordinary	2.60- 2.75
Kraft, standard Swedish	2.80- 3.00
Ground wood, per ton	38.00-40.00

Price & Pierce, 3,450 bls. from Gothenburg; Johaneson, Wales & Sparre, 1,650 bls. from Sundsvall, 450 from Svartvick, 7,620 from Gefle and 1,875 from Copenhagen; Central Union Trust Co., 4,000 bls. from Soraker, 1,080 from Greaker and 1,330 from Christiania; Equitable Trust Co., 1,500 bls. from Soraker and 260 from Lisbon; Nilsen, Lyon & Co., 25 bls. from Esswick; Scandinavian Pulp Agency, 635 bls. from Gothenburg and 127 from Copenhagen; M. Gottesman & Co., 600 bls. from Svartvick and 6,400 from Sebenico; Atterbury & McKelvey, 450 bls. from Christiania; E. M. Sergeant Co., 445 bls. from Christiania, 2,421 from Gothenburg and 150 from Copenhagen; J. Anderson & Co., 4,495 bls. from Christiania, 2,160 from Greaker, 480 from Hamburg and 3,150 from Gefle; Hartig Pulp Co., 275 bls. from Bremen, 1,300 from Hamburg, 1,477 from Rotterdam and 1,125 from Gefle; Bulkley, Dunton & Co., 2,325 bls. from Bremen and 2,125 from Gefle; Guaranty Trust Co., 1,200 bls. from Copenhagen; Ira L. Beebe & Co., 12,561 bls. from Hamburg and 5,000 from Koningsberg; Castle & Overton, 6,160 bls. from Hamburg; E. J. Keller Co., 233 bls. from Rottendam; Robert Gair Co., 11,572 bls. ground wood from Port Alfred; New York Trust Co., 1,318 bls. from

BATHURST LUMBER COMPANY, LIMITED

PRICE & PIERCE, LTD.
17 East 42nd Street, NEW YORK CITY

ARE NOW THE

SELLING AGENTS
for Bathurst Pulp in the United States

Unbleached Sulphite 50 tons daily
Kraft Pulp 50 tons daily

Our pulp is made from Canadian Spruce
We ship in sheets, baled

BATHURST, NEW BRUNSWICK, CANADA

The B.Q.-INC. QUALITY PULPS

HAFSLUND NORWAY — "HAFSLUND BEAR" Bleached Sulphite

F:HAGA — "FORSHAGA" Bleached Sulphite

KRAFT HURUM NORWAY SPECIAL — "HURUM SPECIAL" Extra Strong Kraft

KOOS BAC — "BAMBLE" Extra Strong Kraft

The Borregaard Company
200 Fifth Ave. Incorporated New York, N.Y.

EASTERN MANUFACTURING COMPANY

BLEACHED SULPHITE

Made from spruce
grown in the forests
of Northern Maine.

Send for Samples.

EASTERN MANUFACTURING CO.
501 Fifth Avenue NEW YORK

E. J. KELLER COMPANY
INCORPORATED
200 FIFTH AVENUE
NEW YORK

FOREIGN AND DOMESTIC

PAPER MAKERS' SUPPLIES
CHEMICAL AND MECHANICAL PULPS
COTTON, JUTE AND FLAX WASTES
EAST INDIA MERCHANDISE

BRANCH OFFICE
MALMTORGSGATAN 8
STOCKHOLM
SWEDEN

Trieste; Tidewater Paper Mills Co., 21,372 bls. ground wood from Murray Bay, 12,647 from Liverpool, N. S., and 5,731 from Halifax; National City Bank, 246 bls. from Trieste, 845 from Hamburg and 1,600 from Christiania; Howell-Donaldson Co., 334 bls. from Hamburg; Mead, Patton & Co., 4,609 bls. from Gaspe; Pagel, Horton & Co., 900 bls. from Gothenburg and 7,612 from Gefle; Lagerloef Trading Co., 440 bls. from Kotka; Poland Paper Co., 1,660 bls. from Christiania; Irving Bank-Columbia Trust Co., 624 bls. from Copenhagen; Buck, Kaier & Co., 1,400 bls. from Copenhagen; Order, 212 bls. from Christiania, 63 from Copenhagen, 2,000 from Hamburg, 1,336 from Helsingfors and 3,473 from Kotka.

Paper Stock

Importations of papermaking materials other than wood pulp at the port of New York were on a fairly heavy scale in October. Large amounts of rags were received; in fact, the volume of rag imports appeared to be close to a record, while proportionately large lots of old rope, bagging and other grades also arrived. Imports of all kinds of papermaking stock through the port of New York in October, with names of consignees, were as follows:

Old Rope

Brown Bros. & Co., 169 coils and 278 bls. from Antwerp, 493 coils and 16 bls. from Bristol, 157 coils from Hull, 37 bls. from Manchester, 227 coils and 168 bls. from Rotterdam, 50 coils from Hamburg, 78 coils from Newcastle and 58 coils from Christiania; Cohen & Co., 7 bls. from Nassau; E. J. Keller Co., 97 bls. from Rotterdam, 765 coils from Copenhagen and 65 bls. from Hamburg; Ellerman's Wilson Line, 182 coils from London; United States Mortgage & Trust Co., 22 bls. and 13 coils from Hamburg, 57 bls. from Rotterdam and 149 bls. from Bremen; W. Schall & Co., 123 bls. from Barcelona, 28 coils from Hamburg and 88 bls. from Glasgow; G. M. Graves Co., 23 bls. from Rotterdam; Castle & Overton, 73 bls. from Rotterdam and 57 bls. from Bergen; W. H. Cummings & Sons, 16 coils and 50 bls. from Havre; Stone Bros. Co., 335 coils from London; M. Wolfer & Co., 40 bls. from Havana; United Fibre Co., 47 coils from Glasgow; New York Trust Co., 117 coils from Hull; Katzenstein & Keene, 142 coils from London; Order, 100 bls. from Bergen and 42 bls. from London.

Old Bagging

S. Birkenstein & Sons, 409 bls. from Rotterdam; Maurice O'Meara Co., 37 bls. from Southampton and 37 from Antwerp; E. J. Keller Co., 329 bls. from Copenhagen, 255 from Rotterdam, 165 from Antwerp and 109 from Hamburg; Banque Belge pour l'Etranger, 104 bls. from Hamburg and 1,013 from Havre; Chase National Bank, 161 bls. from Antwerp; Castle & Overton, 549 bls. from Rotterdam; Daniel M. Hicks, Inc., 85 bls. from Antwerp; Bankers Trust Co., 237 bls. from Antwerp; E. Butterworth & Co., 346 bls. from Hull; Brown Bros. & Co., 80 bls. from Glasgow; Kidder Peabody Acceptance Corp., 90 bls. from Havre; Order, 154 bls. from Southampton, 182 from Manchester and 85 from Genoa.

Rags

E. J. Keller Co., 650 bls. from Kobe, 121 from Marseilles, 807 from Hamburg, 608 from Copenhagen, 36 from Havre, 119 from Bordeaux, 468 from St. Nazaire, 131 from Trieste, 1,158 from Rotterdam, 42 from Southampton, 953 from Leghorn, 64 from Antwerp and 84 from Bremen; Katzenstein & Keene, 379 bls. from Barcelona and 75 from Rotterdam; S. Birkenstein & Sons, 269 bls. from London, 99 from Rotterdam, 119 from Newcastle, 230 from Bordeaux and 84 from Leghorn; I. Abela & Co., 80 bls. from Trieste; Castle & Overton, 80 bls. from Dunkirk, 68 from Hamburg and 54 from Bremen; Albion Trading Co., 297 bls. from Havre and 84 from Antwerp; P. Berlowitz, 227 bls. from Antwerp and 120 from Rotterdam; Whaling Waste Products Co., 113 bls. from Rotterdam; Atterbury & McKelvey, 126 bls. from Southampton; M. Wolfer & Co., 4 bls. from Havana; Stone Bros. Co., 68 bls. from Havre, 237 from Rotterdam, 215 from London, 237 from Antwerp and 22 from Barrow; Darmstadt, Scott & Courtney, 44 bls. from Dunkirk; Marquardt-Hewitt Corp., 41 bls. from Rotterdam; J. J. Patricof, 85 bls. from Rotterdam; Robert Blank, 80 bls. from Rotterdam and 10 from Bremen; Daniel M. Hicks, Inc., 50 bls.

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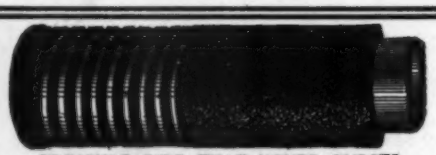

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Miscellaneous Paper Stock

Albion Trading Co., 128 bls. from Havre; British Bank of South America, 17 bls. from Liverpool; Chemical National Bank, 113 bls. from Hamburg; Whaling Waste Products Co., 78 bls. from Havre; Equitable Trust Co., 290 bls. from Antwerp; Maurice O'Meara Co., 24 bls. from Dundee; W. Schall & Co., 86 bls. from Dundee and 104 from Dunkirk; Guaranty Trust Co., 92 bls. from Dundee, 27 from Antwerp and 548 from Copenhagen; Salomon Bros. & Co., 24 bls. from Dunkirk; Daniel M. Hicks, Inc., 35 bls. from Dunkirk; Lahn & Simons, 23 bls. from Manchester; R. F. Downing & Co., 66 bls. from Manchester; Coal & Iron National Bank, 35 bls. from Manchester and 19 from Glasgow; Anglo-South American Trust Co., 182 bls. from Glasgow, 313 from Genoa, 225 from Antwerp and 71 from Liverpool; Brown Bros. & Co., 108 bls. from Glasgow and 114 from Dublin; International Purchasing Co., 59 bls. from Havre; Mechanics & Metals National Bank, 157 bls. from Glasgow; E. J. Keller Co., 73 bls. from Antwerp; Prince & Kennedy, 44 bls. from Dublin; Bank of New York & Trust Co., 67 bls. from Copenhagen; order, 303 bls. from Liverpool, 101 from Dundee and 43 from Glasgow.

Paper

Taking the arrivals at the port of New York as a criterion, the import trade of the United States in paper was devoid of feature in October. There were some sizable shipments of foreign newsprint imported, but the tonnage of print paper received did not begin to compare with that of a few months ago. Similarly, receipts of wrapping paper were far below the big amounts imported earlier in the year, although a few

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"Steel for Strength—Wood for Durability"

large shipments came in last month. Imports of cigarette, hanging, writing and filter paper and board were about normal. Importations of paper of all kinds through the port of New York in October follow, these figures being taken from the manifests of steamers reaching this port during the month:

Printing

Fernstrom Paper Co., 100 rolls and 464 bls.; B. F. Drakenfeld & Co., 133 cs.; Bank of New York & Trust Co., 845 rolls; Seaman Paper Co., 235 rolls; J. P. Heffernan Paper Co., 664 bls. and 160 rolls; Perry, Ryer & Co., 146 cs. and 86 bls.; International Acceptance Bank, 1,896 rolls; Schenckers, Inc., 36 bls. and 6 cs.; Traders Paper Co., 20 cs.; E. Dietzgen & Co., 60 cs.; Borregaard Co., 2,831 rolls; C. K. MacAlpine & Co., 45 rolls; C. G. Keferstein, 11 rolls; C. Steiner, 86 bls. and 19 cs.; New York & Hauseatic Corp., 46 rolls; Fourth & First National Bank, 173 rolls; Corn Exchange Bank, 69 cs.; Maurice O'Meara Co., 12 cs.; H. Reeve Angel & Co., 183 cs. and 477 rolls; Parsons & Whittemore, 2,035 rolls; Martin & Bechtold, 2 cs.; Chemical National Bank, 205 rolls; Perkins-Goodwin Co., 72 rolls; R. F. Downing & Co., 31 cs.; J. Haas Bros., 165 bls.; Bank of America, 61 bls.; order, 727 rolls, 254 bls. and 76 cs.

Wrapping

Arkell Safety Bag Co., 204 rolls; Gilbert Paper Co., 10 rolls and 114 bls.; Universal Paper Co., 275 rolls and 42 bls.; Bernard, Judae & Co., 8 cs.; Chemical National Bank, 283 bls. and 906 rolls; J. P. Heffernan Paper Co., 837 bls.; Maurice O'Meara Co., 574 bls.; Wilkinson Bros. & Co., 318 bls. and 523 rolls; Irving Bank-Columbia Trust Co., 26 bls.; Blauvelt-Wiley Paper Mfg. Co., 44 bls.; F. C. Strype, 33 cs.; Republic Bag & Paper Co., 472 rolls and 144 bls.; International Acceptance Bank, 17 rolls; Borregaard Co., 486 bls. and 334 rolls; Hyman & Schultz, 131 rolls; Chatham & Phenix National Bank, 104 rolls; C. Steiner, 14 bls.; New York Trust Co., 11 bls. and 49 rolls; R. Hoe & Co., 2 bls.; American Merchant Lines, 5 cs.; order, 567 bls. and 152 rolls.

Cigarette

Standard Products Corp., 255 cs.; R. J. Reynolds Tobacco Co., 2,250 cs.; De Manduit Paper Corp., 307 cs.; American Tobacco Co., 3,100 cs.; Southern Pacific Co., 3 cs.; P. J. Schweitzer, 127 cs.; F. P. Gaskell & Co., 20 cs.; British-American Tobacco Co., 68 bls.

Writing

Guibont, Freres & Co., 93 cs.; F. C. Strype, 9 cs.; W. J. Byrnes & Co., 3 cs.; J. W. Hampton Jr. & Co., 17 cs.; F. E. Wallace & Co., 3 cs.; J. C. Robold & Co., 23 cs.; J. D. Smith & Co., 3 cs.; H. W. Robinson & Co., 3 cs.; Globe Shipping Co., 2 cs.; B. Altman & Co., 10 cs.; E. Dietzgen & Co., 7 cs.; Sanderson & Co., 23 cs.; Independent Forwarding Co., 5 cs.

Drawing

H. Reeve & Co., 6 cs.; E. Dietzgen & Co., 38 cs.; Devoe & Raynolds Co., 3 cs.; Keuffel & Esser Co., 5 cs.

Filter

E. Fougera & Co., 49 cs.; J. Manheimer, 214 bls.; American Import Corp., 18 bls.; H. Reeve Angel & Co., 31 cs. and 2 bls.; A. Giese & Son, 19 bls.

Tissue

Meadows, Wye & Co., 47 cs.; F. C. Strype, 68 cs.; G. W. Sheldon & Co., 8 cs.; Meagher-Devoy Shipping Co., 11 cs.; F. R. Arnold & Co., 3 cs.; Milton Snedeker Co., 67 cs.

Photo

P. C. Zuhlke, 337 cs.; Gevaert Co. of America, 66 cs.; G. Gennert, 12 cs.; J. J. Gavin & Co., 4 cs.; Globe Shipping Co., 135 cs.

Hanging

A. C. Dodman Jr. & Co., 170 bls.; C. A. Haynes & Co., 34 bls.; Drinkhansen & Hollkott Paper Co., 1,730 rolls and 271 bls.; W. H. S. Lloyd & Co., 24 bls. and 23 cs.; W. J. Byrnes & Co., 3 cs.; Independent Forwarding Co., 5 cs.; F. G. Prager & Co., 612 rolls and 246 bls.; J. W. Hampton Jr. & Co., 676 bls.; F. J. Emmerich & Co., 11 cs. and 23 bls.; American Express Co., 333 rolls.

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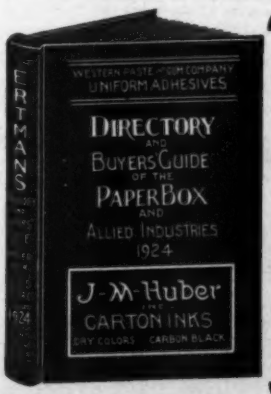

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Miscellaneous

Japan Paper Co., 141 cs.; Dupont Cellophane Co., 9 cs.; A. Goodman & Co., 40 cs.; Whiting-Patterson Co., 278 cs.; Coenca-Morrison Co., 32 cs.; Charles W. Williams & Co., 74 cs.; Louis DeJonge Co., 5 cs.; Independent Forwarding Co., 32 bls.; Judson Freight Forwarding Co., 9 cs.; Phoenix Shipping Co., 47 cs.; Favor, Ruhl & Co., 8 cs.; P. H. Petry & Co., 2 cs.; Saentis, Inc., 12 rolls; Kupfer Bros. Co., 9 cs.; Strupp & Co., 56 cs.; Goldman, Sachs & Co., 121 bls.; A. Flinn & Co., 11 cs.; Thomas & Pierson, 13 cs.; Overton & Co., 4 cs.; H. D. Catty & Co., 7 cs.; Hensel, Bruckmann & Lorbacher, 17 cs.; F. L. Kraemer & Co., 15 cs.; E. L. Garvin & Co., 6 cs.; Massce & Co., 3 cs.; C. A. Johnson & Co., 15 bls.; National Paper & Type Co., 17 bls.; Davies, Turner & Co., 62 cs.; G. W. Sheldon & Co., 8 cs.; Impex Trading Co., 61 cs.; Borden & Riley Paper Co., 23 cs.; W. Schall & Co., 13 cs.; C. H. Boutin, 27 cs.; Tausig & Pilcer, 4 cs.; American Exchange National Bank, 23 cs.; Lunham & Moore, 20 bls.; Ault & Wiborg, 24 cs.; Advance Sales Co., 5 cs.; Pennsylvania Railroad Co., 6 cs.; J. Beckhard, 10 cs.

Pulp Testing Rules

The Joint Committee on Approved Chemists, representing the American Paper and Pulp Association, the Association of American Wood Pulp Importers and the Technical Association of the Paper Industry, through its secretary, O. M. Porter, has distributed to the chemists whose training, experience and pulp-testing equipment justified their listing as pulp-testing chemists approved by this Joint Committee, a set of proposed rules for sampling, weighing and testing wood pulp. The suggested rules include every phase of the testing problem, and comments have been asked from all the chemists who have been listed. After these comments have been received and digested, it is planned to publish the revised rules for general distribution to those interested in the matter of pulp testing.

By developing these rules, the Joint Committee plans to establish standards of pulp testing and uniformity of methods, in order that both buyers and sellers of foreign and domestic pulps may be assured of accurate, reliable tests by competent chemists whose standing is recognized by American, Canadian and Scandinavian Associations.

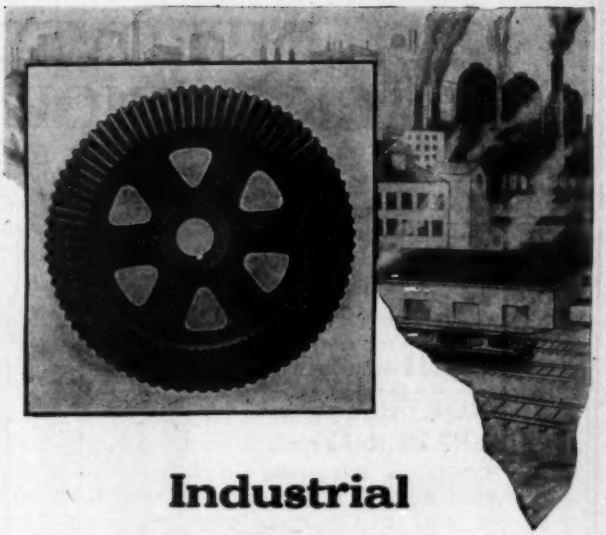
The Joint Committee on Approved Chemists has recently approved for listing the following: Mr. Hyman L. Rammer, of National Paper Products Co., Stockton, California; Professor Paul DeCosta Bray, of the University of Maine, Orono, Maine, and Mr. Donald K. Patillo, of Arrowhead Mills, Inc., Fulton, N. Y.

Waxed Paper Assn. Issues Attractive Bulletin

The American Waxed Paper Association has inaugurated the plan of sending out a series of educational bulletins to consumers of waxed paper in the United States. Their object is to educate consumers of waxed papers to the advantages of securing the proper grades and standards for their particular work.

The first bulletin of the series has just been issued in which is published the trade customs compiled out of the practices prevailing in the trade and with the purpose of protecting the buyer against annoyances and misunderstandings.

An innovation in showing full sized underfeed stokers in operation will be an outstanding feature of the exhibit of the Detroit Stoker Co., Detroit, Michigan, manufacturers of Detroit Single and Multiple Retort Underfeed and V-Type Stokers. This exhibit will be held in Booths 205, 206 and 207 at the Mechanical Engineering Power Show, Grand Central Palace, New York City, December 1 to 6, 1924.



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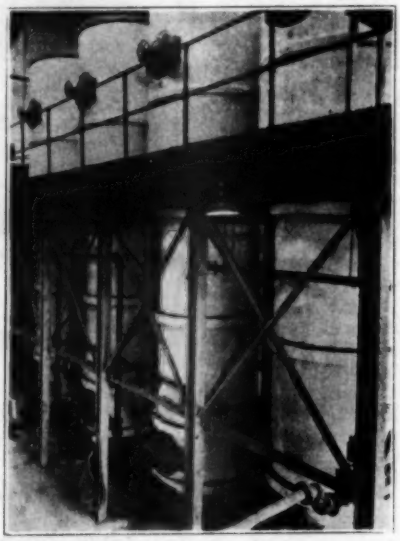

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PROCESSES

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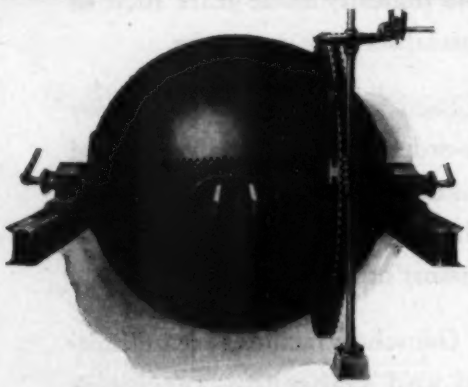
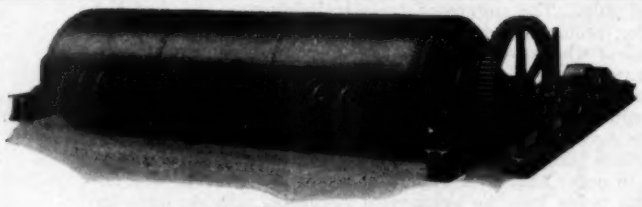


Globe and Cylinder Rotary Bleaching Boilers
Digesters
Riveted Steel Tanks
Flumes, Smokestacks, Penstocks, General Steel Plate Construction of every description



Our Greatest Sales Asset

The extraordinary good will that is felt for Biggs Rotaries wherever they have been used is the greatest sales asset we have. After all, there is nothing so convincing as repeat orders for evidence of satisfaction.

Our old customers return to us again and again for additional equipment, and it is a matter of business honor with us to make our side of the transaction exactly right, as to product, price, and delivery, whether competitive bids are secured or not.

The Biggs Boiler Works Company
Seneca Place and Case Ave. Akron, Ohio
Eastern Representative, Mr. Grenville A. Harris, 15 Park Row, New York City

The Biggs Boiler Works Co. Akron Ohio

GLOBE and CYLINDER
ROTARY BLEACHING BOILERS
for Years of Dependable Cooking and Bleaching